where a total of 16 native species are known (all but one of which is endemic) in three genera (SMITH & STONE, 1968; SMITH, 1985).

The *Araliaceae* of Vanuatu comprise five genera and 16 species, 12 of which are clearly native. The remaining four species, all members of the genus *Polyscias*, are widely cultivated throughout the Pacific region, although their precise native origin is unknow. Of the 12 native taxa, a total of eight, or 67 %, are endemic to Vanuatu, a considerably higher rate than SCHMID's (1987) estimated average of 20 % for the ca. 900-950 species of angiosperms native to the archipelago.

The islands that make up Vanuatu extend over about 800 km, between about 13° S and 20° S, and together cover approximately 13,000 km². The group includes about 20 principal islands, the largest of which, Santo, covers nearly 3500 km². In the north, the Banks Islands are situated some 500 km from the Solomons, while the southernmost island, Aneityum, lies just over 200 km northeast of the Loyalty Islands and 350 km from Grande Terre, New Caledonia. The Fiji group is located about 650 km to the east of Vanuatu. Detailed information on many other aspects of the physical environment of Vanuatu are summarized by SCHMID (1987), who also presents an analysis of the evolution and relationships of the region's various floras.

The phytogeographic relationships of the native Vanuatu *Araliaceae* reflect the country's physical setting in the southwest Pacific, and clear affinities can be seen with each of the surrounding island groups. The strongest relationships are with New Caledonia, which is not only the closest land area to Vanuatu, but also has the largest and richest native flora in the region, both in general and with respect to *Araliaceae*. Four species from Vanuatu (*Meryta neo-ebudica, Schefflera tannae, S. actinostigma* and *Polyscias schmidii*) are clearly most closely related to New Caledonian elements. An additional four taxa are either endemic representatives on Vanuatu of somewhat more widespread groups that are centered on New Caledonia (*Schefflera neo-ebudica* and *S. vanuatua*, both with relatives also occurring on Fiji), or are relatively widespread species that appear to have evolved on New Caledonia and subsequently dispersed to Vanuatu and other areas (*Delarbrea paradoxa* subsp. *paradoxa* and *Polyscias cissodendron*).

By contrast, two *Araliaceae* endemic to Vanuatu are clearly part of a more northern element that shows affinities with the Solomon Islands and the Malesian region : *Osmoxylon orientale* and *Schefflera cabalionii*. The remaining two native species are part of a more eastern component, and both reach their western limits in Vanuatu; *Polyscias multijuga* occurs primarily in Fiji, with outlying populations also found in Tonga, Niue, the Territory of Wallis and Futuna, and of course Vanuatu, while *P. samoensis* is curiously disjunct between Samoa and Vanuatu, and apparently absent from other islands in the region. While evident for *Araliaceae*, this pattern of phytogeographic relationships, in which links with New Caledonia are clearly the most prominant and important, appears to be somewhat uncharacteristic for the flora of Vanuatu as a whole. SCHMID (1987) felt that the area's floristic affinities were much stronger with Fiji, and to a lesser degree with the Solomon Islands (and thus the Malesian region), than with New Caledonia.

The taxonomic treatment presented here is intented to serve as a basis for developing a better understanding of the *Araliaceae* of Vanuatu, especially within the context in the entire

southwestern Pacific region. It is further hoped that this paper will stimulate future collectors in Vanuatu to continue devoting special attention to the family, and that more material will be gathered of the several species that are still very poorly known. Additional exploration throughout Vanuatu, and particularly on those islands that have never been visited by botanists or have been collected only superficially, should be encouraged, and could very well result in the discovery of more new taxa.

The generic synonymies presented below include primarily those names that have been applied to species occurring in the region (essentially the southern Pacific, Australia, Malesia and Micronesia), although some generic names of particularly important or widespread usage have also been listed; the lists are, however, not intended to be exhaustive. The synonymy given for each species is, on the other hand, as complete as possible, although certain obscure names mostly of horticultural origin may have been overlooked in the case of the cultivated species of *Polyscias*. Names for several species from outside Vanuatu that are still to be described are referred to as "*ined.*"; they are mentioned purely as a matter of convenience, which should not in any way be construed as constituting publication.

TAXONOMIC TREATMENT

Key to the Genera

1. Leaves simple.
   2. Leaves palmately lobed; flowers hermaphroditic, pedicellate, main inflorescence branches trifid, with two lateral umbellules of normal flowers and a central umbellule bearing sterile bacciform flowers ('pseudo-fruits') ..... 1. *Osmoxylon*
   2'. Leaves entire; flowers unisexual (plants dioecious), sessile, the female ones in dense heads, the male ones in panicles of umbellules ..... 2. *Meryta*

1'. Leaves palmately or pinnately compound (occasionally unifoliate in *Polyscias scutellaria*).
   3. Leaves palmately compound; pedicels not articulated below the flowers ..... 3. *Schefflera*
   3'. Leaves pinnately compound or unifoliate; pedicels articulated below the flowers.
      4. Petals imbricate in bud; base of the petiole and axes of the inflorescence covered with a corky, exfoliating periderm; styles and carpels 2 ..... 4. *Delarbrea*
      4'. Petals valvate in bud; petiole and inflorescence axes smooth, glabrous or pubescent; styles and carpels 2-5 ..... 5. *Polyscias*

1. OSMOXYLON Miq.

Ann. Mus. Bot. Lugd.-Bat. 1 : 5 (1863).
Eschweileria Zipp. ex Boerl., Ann. Jard. Bot. Buitenzorg 6 : 112 (1887); *non Eschweilera* Mart. (1828).
Pseudosandalum O. Kuntze, Rev. Gen. Pl. 1 : 271 (1891), ("*Pseudo-santalum*") *nom. illeg.*
Boerlagiodendron Harms, *in* Engl. & Prantl, Nat. Pflanzenfam. III (8) : 31 (1894).

Hermaphroditic or andromonoecious (?), glabrous or tomentose, unarmed shrubs or trees. Leaves palmately lobed or simple (rarely palmately compound outside Vanuatu), alternate, usually clustered at branch ends; base of the petioles expanded and bearing one to several spiral or transverse crests or collars (rarely absent), the stipules forming a ligule. Inflorescence

a compound umbel, terminal, erect, primary axis short, secondary axes each terminating in three tertiary axes, the central one bearing a head or umbellule of sterile bacciform flowers ("pseudo-fruits"), the two lateral ones each with a head or umbellule of hermaphroditic (likely protandrous) flowers, the pedicel not articulated. Sepals obsolete. Petals few to numerous, united below into a short tube. Stamens 4-30, the anthers with 4 thecae. Ovary inferior, 1-many-carpellate, with a flat to shallowly concave nectar disk, styles short, united to form a central boss bearing the pustulate stigmas. Fruit a drupe; exocarp fleshy, endocarp crustaceous; endosperm smooth or wrinkled.

Osmoxylon comprises about 50 species, primarily occurring in Malesia (Borneo and the Philippines west to New Guinea), with additional members reaching Taiwan, Micronesia, the Solomon Islands and Vanuatu (STONE, 1962, 1983; PHILIPSON, 1975, 1979). The genus exhibits several characters that are very distinctive within *Araliaceae*, including spiral or transverse crests around the petiole base, trifid inflorescence branches with the central axis bearing sterile, bacciform flowers, and a corolla that is tubular below but lobed above. *Osmoxylon* is represented in Vanuatu by one species.

1. **Osmoxylon orientale** (Guillaumin) B. C. Stone

Gard. Bull. Sing. 36 : 101 (1982).
Boerlagiodendron orientale GUILLAUMIN, J. Linn. Soc., Bot. 51 : 554 (1938). Type : *I. & Z. Baker 258*, Vanuatu, Santo, Hog Harbour, rain forest, 25 Jan 1934 (holo-, BM!).

Hermaphroditic trees ca. 4-5 m tall. Leaves palmately lobed, often deeply so, confined to the branch ends, the blade thickly papyraceous, cordate-orbicular, the lobes ca. 25-30 cm long, broadly acuminate to nearly obtuse at the apex, margins serrate-crenate; petiole 15-25 cm long, grooved above, basal collar spiral, fimbriate. Inflorescence terminal, erect, spherical, primary axis stout, ca. 10-15 cm long at maturity, secondary axes ca. 25-30, the outer ones somewhat arcuate, each 6-10 cm long, rigid, subtended by a stiff, triangular-lanceolate, early caducous bract to 30 mm long, tertiary axes 3 per secondary axis, each subtended by a lanceolate-subulate bractlet to ca. 15 mm long, the lateral two axes (bearing fertile hermaphroditic flowers) ca. 6-9 cm long, often arcuate, not evidently articulated (occasionally with 1-2 small bract scars), the central axis (with sterile bacciform flowers) 1-3 cm long, erect; hermaphroditic flowers ca. 12-15 per umbellule, the pedicels 4-8 mm long, stout, sterile bacciform flowers ca. 8-10 per umbellule, the pedicels 10-12 mm long, more slender. Calyx absent. Corolla globose in bud (unknown at anthesis). Stamens 4. Ovary of the hermaphroditic flowers ca. 15-carpellate, urniform, ca. 2.5 mm high just after anthesis, stigmatic crest laterally compressed and narrowly elliptic, sterile bacciform flowers (2-)3-5-carpellate. Fertile fruit slightly compressed laterally, pinkish white and translucent when young, red at maturity, depressed-globose to oblate, 7-8 mm high, 9-10 mm wide, evidently ribbed when dry, with an evident scar left by the corolla and stamens, the disk shallowly concave, sterile bacciform pseudo-fruits globose to broadly ovate, 7-10 mm high, 6-10 mm wide, shallowly to deeply ribbed when dry.

ADDITIONAL MATERIAL. — BANKS ISLAND : VANUA-LAVA : *Morat 7422* (MO, NOU, P, PVNH); *Bourret 261* (NOU). — SANTO : Environs de Vanafo, *Cabalion 283* (PVNH), *294* (NOU). Plateau, pâturage chez M. Charles, *Schmid 236* (NOU, P). En allant sur Vanafo, corail soulevé, *Suprin 376*

(NOU). Big Bay, flood plain, R. Jordan near coast, *Whitmore 3026* (K). — MAEWO : Chemin entre Saritamata-Keremkei, 250 m, *Bourdy 608* (P, PVNH). — PENTECOST : Vallée au Sud de Melsisi, *Cabalion 1138* (NOU). — NGUNA : Near summit of Mt. Mawasi, 300 m, *B. C. Stone 2221* (BISH).

Osmoxylon reaches its eastern and southern limits in Vanuatu, where the endemic species *O. orientale* is known to occur on at least five islands. The affinities of *O. orientale* are unclear, and probably cannot reasonably be assessed before a thorough analysis is also made of the species that occur in the Solomon Islands.

Osmoxylon orientale grows in primary and secondary vegetation, from sea level to perhaps 300 m, and is reported to be locally common in at least some areas. The available specimens indicate that flowering occurs from December to March, with fruiting in April and May.

2. MERYTA J. R. & G. Forster

Gen. Pl. : 119 (1776).
Botryodendrum ENDL., Prodr. Fl. Norfolk. : 62 (1833).
Neara SOL. ex SEEM., Fl. Vit. : 118 (1865), *pro syn.*
Strobilopanax R. VIGUIER, Ann. Sci. Nat. Bot., Sér. 9, 4 : 148 (1906).

Dioecious, unarmed treelets or trees. Leaves simple, alternate, clustered at branch ends, the blade entire to occasionally pinnately lobed (often deeply so in juvenile foliage), the midvein often with prominent bulges beneath; petiole with an expanded, clasping base with membranous or scarious margins. Inflorescence a panicle of umbellules, racemules or capitula, terminal, erect or pendent, the short pedicels not articulated below the flowers (or the flowers sessile in some species). Flowers unisexual, actinomorphic, staminate flowers free, pistillate flowers free or united basally to nearly throughout to form globose heads. Sepals reduced to minute teeth or wanting. Petals 3-5(-6), valvate. Stamens 3-5(-6), vestigial and sterile in female flowers of some species, the anthers with 4 thecae, dorsifixed. Ovary inferior, 4-15-carpellate, surmounted by a nectar disk, the styles as many as the carpels, united basally, the free arms erect at anthesis, spreading in fruit. Fruit a drupe (multiple in species with united pistillate flowers); exocarp fleshy, endocarp crustaceous; endosperm smooth.

Meryta is a particularly distinctive genus of dioecious, simple-leaved *Araliaceae*, with about 30 species, nearly all of which are endemic to one or a few Pacific islands (cf. LOWRY, 1988). Eleven species occur on New Caledonia (LOWRY, unpubl. data), and four taxa are recognized in Samoa and Tonga (COX, 1985); members also occur from Micronesia (Yap) south through Vanuatu and Norfolk Island to New Zealand, and east to Fiji and Polynesia, with an as yet undescribed species in the Marquesas.

The segregate genus *Strobilopanax* was circumscribed to include species with globose multiple fruits that develop from capitula in which there is nearly complete fusion among the pistillate flowers. VIGUIER (1906) originally included two species, *S. macrocarpa* (Baillon) Viguier and *S. macrocephala* (Baillon) Viguier (both synonyms of *Meryta denhamii* Seem.), and GUILLAUMIN (1938) later added *S. neo-ebudica*. A fourth species, *Meryta capitata* Christoph., from Samoa, has fused pistillate flowers and globose multiple fruits, and could also have been included in *Strobilopanax*, although the combination was never made.

Among the species that do not fall strictly within VIGUIER's concept of *Strobilopanax* (i.e., those that comprise *Meryta* sensu stricto), however there are not only taxa with free pistillate flowers, but also a number of species that exhibit various degrees of fusion. Several, including *M. balansae* Baillon and *M. malietoa* P. A. Cox, have pistillate flowers and fruits that are often basally fused, while in *M. pachycarpa* Baillon, *M. sonchifolia* Linden & André, and *M. mauluulu* P. A. Cox, the flowers and fruits are united for half their length or more. Such a range of character states thus suggests that the nearly complete fusion seen in members of *Strobilopanax* represents nothing more than an extreme, and supports several earlier treatments (e.g., HARMS, 1938; SMITH & STONE, 1968) in which all of the species are included within *Meryta*.

1. **Meryta neo-ebudica** (Guillaumin) Harms

Notizbl. Bot. Gart. Berlin-Dahlem 14 : 321 (1938).
Strobilopanax neo-ebudicus GUILLAUMIN, J. Arnold Arbor. 12 : 263 (1931). Type : *Kajewski 980* (coll. J. P. WILSON), Vanuatu, Aneityum, Anelgauhat Bay, forest, 325 m (holo-, A!; iso-, BRI!, K!, NY!, P!).

Dioecious, sparsely branched trees 4-10 m tall. Leaves simple, the blade thickly papyraceous to subcoriaceous, obovate to nearly elliptic, 25-75 × (6-)7-25 cm, the midvein with ca. 4-6 bulges beneath, these drying to form restrictions, the apex broadly acuminate to acute or nearly obtuse, the margin entire, often somewhat undulate, minutely thickened and with an evident submarginal collecting vein, the base narrowly acute to attenuate and often shortly decurrent; petiole 2-9 cm long, slender to rather stout, 2-5 mm in diam., with a somewhat expanded, clasping base. Inflorescence terminal, erect, a panicle of dense capitula, primary axis stout, ca. 12-20(-25) cm long, the secondary axes ca. 8-12, scattered, subtended by an early caducous cataphyll leaving an evident scar, on staminate plants ca. 10-15 cm long, slender, each with ca. 10-15 scattered tertiary axes 3-6 cm long and bearing 6-12 scattered, dense capitula of numerous flowers, secondary axes on pistillate plants 1-3 cm long, stout, each with (1-)2-4 tertiary axes 0.5-4 cm long terminating in a dense, globose capitulum of 12-16 flowers. Staminate flowers free or united only at the base, yellowish; sepals wanting; petals 4, narrowly ovate; stamens 4, inflexed in bud, ascending at anthesis, the anthers cream white, the filaments slender. Pistillate flowers at anthesis fused in the lower half, the upper portion forming a short, broadly urniform beak; sepals wanting; petals 5, narrowly deltoid to subulate, acute, ca. 1.5 mm long; ovary 7-10-carpellate, styles 7-10, basally united, the free arms thick, spreading at anthesis, expanding somewhat in fruit, becoming recurved. Fruit multiple, globose, ca. 2-3(-4) cm in diam. at maturity, composed of 12-16 fully united drupes, the sutures somewhat obscure, never separating or opening upon drying.

ADDITIONAL MATERIAL. — BANKS ISLANDS : GAUA : *Comins 27b* (K). — SANTO : Hog Harbour, 25 m, *I. & Z. Baker 12* (BM); *24* (BM). Pialulup, forest, 300 m, *Bourdy 316* (BISH, K, NOU, NSW, P, PVNH). Au-dessus d'Ipayato sur le sentier de Pic Santo, *Bourdy 1103* (NOU, P, PVNH). Environs de Vanafo, *Cabalion 287* (NOU). Nokolula, 200 m, *Cabalion 2786* (BISH, K, NOU, P, PVNH). "Mon Biftek", *S. Gowers 135* (PVNH). Vallée de l'Apouna, 300 m, *MacKee RSNH 24241* (A, K, NOU, NSW, P, PVNH). — PENTECOST : Melsisi, plateau, 350-400 m, *Cabalion 1203* (NOU). N end, *Walsh 119* (NSW, PVNH). — AMBRIM : Grand plateau, 700 m, *Aubert de la Rüe s.n.* (P). Creek pour aller du volcan à 1550 m au-dessus du village de Lalinda, 110 m, *Bourdy 113* (K, NOU, P, PVNH). — MALEKULA : Atchin,

Layard s.n. (NSW). — NGUNA : Sommet du volcan, 590 m, *Cabalion 916* (NOU). — EFATE : 2 km E du Mt. Erskine, forêt, 400 m, *Cabalion 1887* (K, P, PVNH). Narabut, near expedition camp site at Tangueleguele, forest, 17°35′ S, 168°21′ E, 300 m, *Green RSNH 1027* (A, K, NOU, NSW, P, PVNH). Port-Vila, dans les vallées, *D. Levat s.n.* (P). — ERROMANGA : Potiraousak, *Cabalion 1737* (PVNH). Vicinity of the Nouankao camp, 18°54′ S, 169°11′ E, 150 m, *Green RSNH 1259* (K, NOU, NSW, P, PVNH). Without precise locality, *Schmid 3161* (NOU). — TANNA : Près du lieu-dit "Centre Brousse", *Bernardi 12853* (G, NOU). — ANEITYUM : Anelgauhat, 200 m, *Cabalion 1917* (PVNH).

Meryta neo-ebudica is closely related to *M. denhamii*, whose range extends from Grande Terre to the Loyalty Islands in New Caledonia, slightly over 100 km to the southwest. The two species can, however, be readily distinguished by their fruits. While the drupes comprising the multiple fruits of both taxa appear fully united in fresh material, in *M. denhamii* the sutures are more prominent and consistently separate as the fruit dries, whereas they are generally somewhat obscure and remain fully closed in *M. neo-ebudica*.

The Samoan endemic *M. capitata* also closely resembles *M. neo-ebudica* in many respects, although the distinctness of these two species appears never to have been doubted by previous authors, presumably because of the large distance that separates their ranges (note, however, that *Polyscias samoensis* is now known to exhibit just such a disjunct distribution between Vanuatu and Samoa; see below). Recent collections of *M. neo-ebudica* clearly show that there is considerable overlap in the characters that SMITH & STONE (1968) used to separate it from *M. capitata* (primarily petiole length, leaf size and shape, and diameter of the multiple fruits).

A cursory study of the available material suggests, however, that it may be possible to distinguish *M. capitata* from *M. neo-ebudica* on the basis of foliar features : the leaves of *M. capitata* appear to be thinner and more papyraceous in texture, and have a finer, denser and more evident network of tertiary veins. Whether other characters support the continued separation of these taxa remains to be seen, and will likely have to wait until a detailed revisions of the entire genus is completed. In any case, if the populations from Vanuatu and Samoa were to be considered conspecific, the name *M. neo-ebudica* would take priority.

Meryta neo-ebudica occurs throughout Vanuatu, primarily from about 100 m to 600 m elevation, although one collection from Santo was taken at 1200 m. The species apparently grows in both primary and somewhat disturbed forests, as well as in more open habitats such as stream banks. The few flowering specimens available were all collected in September, while fruiting material has been gathered in March, July, August and December.

3. SCHEFFLERA J. R. & G. Forster

Gen. Pl. : 45 (1776), *nom. cons. versus Sciadophyllum* P. BR. (1756), *nom. regic.*
Brassaia ENDL., Nov. Stirp. Dec. 1 : 89 (1839).
— *Schefflera* sect. *Brassaia* (ENDL.) TSENG & HOO, Acta Phytotax. Sinica, Addit. 1 : 133 (1865).
Plerandra A. GRAY, Bot. U.S. Expl. Exped. 1 : 729 (1854).
Agalma MIQ., Fl. Ind. Bat. I (1) : 751 (1855).
Tupidanthus HOOK. f. & THOMS., Bot. Mag. 82 : *tab. 4908* (1856).
Bakeria SEEM., J. Bot. 2 : 248 (1864).
Nesopanax SEEM., J. Bot. 2 : 249 (1864).
Dizygotheca N. E. BROWN, Bull. Misc. Inform. 1892 : 197 (1892).
Schefflera sect. *Cephaloschefflera* HARMS, *in* ENGL. & PRANTL., Nat. Pflanzenfam. III (8) : 36 (1894).
— *Cephaloschefflera* (HARMS) MERR., Enum. Philip. Pl. 3 : 231 (1923).
Geopanax HEMSL., Hook. Icon. Pl., *tab. 2821* (1906).
Octotheca R. VIGUIER, Ann. Sci. Nat. Bot., Sér. 9, 4 : 135 (1906).

Hermaphroditic or andromonoecious, glabrous to tomentose, furfuraceous or stellate pubescent, unarmed, oocasionally epiphytic or hemi-epiphytic treelets or trees, or sometimes climbers. Leaves palmately compound, or less often unifoliolate, alternate; leaflets entire to variously divided (often deeply so in juvenile foliage); petiole with an expanded, clasping base, the stipules connate and often ligulate. Inflorescence a compound umbel or variously structured panicle of umbellules or less often capitula or racemules, morphological terminal but sometimes appearing lateral due to retarded development concurrent with rapid extension growth from an adjacent axillary bud, the pedicels not articulated below flowers. Flowers hermaphroditic and protandrous, or unisexual, actinomorphic. Sepals generally 5, forming an entire to shallowly lobed or toothed rim. Petals (4-)5(-7 or more), valvate. Stamens (4-)5-numerous, the anthers with 4 or 8 thecae. Ovary inferior, (2-)5-20(-100)-carpellate, usually surmounted by a fleshy nectar disk, the styles as many as the carpels, free and erect at anthesis, then spreading as the stigmas become receptive, or partially to fully united to form a rostriform stylopodium, or absent with the stigmas sessile. Fruit a drupe, crowned by the persistent calyx rim and the styles or stylopodium; exocarp fleshy, the endocarp crustaceous; endosperm smooth.

Schefflera, as circumscribed here, comprises about 650 to 700 species occurring throughout the tropics and subtropics, with primary centers of diversity in Malesia, Southeast Asia, South America, and New Caledonia. A number of segregate genera have been recognized on the basis of relatively minor differences in inflorescence structure and the number of floral parts. This approach, however, has resulted in the definition of several apparently un-natural groupings. Furthermore, in at least some cases, polymerous segregates have been placed far away from clearly related isomerous groups (e.g., *Octotheca* and *Dizygotheca*, which both occur in New Caledonia and share a pecular and evidently derived type of anther with eight thecae, have even been placed in different tribes by some authors; cf. LOWRY, 1986*b*).

This segregation of various more-or-less well defined groups from *Schefflera* sensu lato has also been incompletely and inconsistently applied (often only when the taxa are easily and conveniently delimited geographically), thus leaving the residual *Schefflera* as a para- or even polyphyletic assemblage comprising all of those taxa that were not removed to a separate genus. Following this process to its logical conclusion, however, would restrict *Schefflera* to the type species, *S. digitata*, and six closely related taxa of the southwest Pacific (cf. discussion below under *S. neo-ebudica*), which is clearly not satisfactory.

FRODIN (1975, pers. comm.) has argued for the opposite approach, in favor of a more broadly defined *Schefflera*. This interpretation has been adopted by several recent authors (e.g., PHILIPSON, 1979; MAGUIRE et al., 1984; FRIEDMANN, 1986; LOWRY et al., 1989), and is followed here. This appears to be the most reasonable way to treat these taxa, at least until sufficient new information becomes available to permit a detailed analysis of relationships among the groups involved from which a new infrageneric classification can be developed that truly reflects the underlying phylogeny.

Two of the segregate genera, *Plerandra* A. Gray and *Dizygotheca* N. E. Brown, are represented among the *Schefflera* of Vanuatu. *Plerandra* is generally defined to include about 15 species whose flowers have a highly polymerous androecium and a gynoecium comprising about five to 20 carpels. Until recently, *Plerandra* was known only from New Guinea, the

Solomon Islands and Fiji, although SMITH & STONE (1968) commented (p. 466) that it had "not yet" been discovered in Vanuatu. The description here of the new species *S. cabalionii* fills out the geographic range of this group.

Dizygotheca, as defined by most authors, was considered endemic to New Caledonia, where it comprises 12 species that are characterized primarily by having anthers with eight thecae and a distinctive paniculate-umbellate inflorescence structure. Careful study of the available material of both *Schefflera tannae* A. C. Smith & B. C. Stone and *S. actinostigma* A. C. Smith & B. C. Stone, however, shows that they also form part of this closely related group, thus extending its range at least somewhat to the northeast.

KEY TO THE SPECIES

1. Stamens ca. 250, exceeding the petals in numbers; carpels 10-12; flowers ca. 2 cm long at anthesis ..... 1. *S. cabalionii*
1′. Stamens 5(-7), usually equal to petals in number; carpel (4-)5-9; flowers and fruit less than 1 cm long.
   2. Peduncles of the umbellules numerous, arranged racemosely throughout the lateral inflorescence axes, each subtended by a persistent subulate bractlet ca. 2-3 mm long; leaflet-blades serrate-denticulate ..... 2. *S. neo-ebudica*
   2′. Peduncles of the umbellules terminal and often in a median verticillate pseudo-whorl along the lateral inflorescence axes; leaflet-blades entire to crenulate.
      3. Inflorescence strictly compound-umbellate, the lateral axes without median pseudo-whorls of umbellules; anthers with 4 thecae; leaflet-blades broadly ovate, the largest not exceeding ca. 8 cm long ..... 3. *S. vanuatua*
      3′. Inflorescence paniculate-umbellate, the lateral axes usually with a median pseudo-whorl of umbellules in addition to the terminal umbellate cluster; anthers with 8 thecae; leaflet-blades obovate to elliptic, the largest exceeding 15 cm long.
         4. Styles fused for 1/2-2/3 of their length, forming a beak in fruit; largest leaflet usually exceeding 20 cm long. ..... 4. *S. tannae*
         4′. Styles free for most of their length, united only in the lower 1/4(-1/2), divergent in fruit; largest leaflet usually less than 20 cm long ..... 5. *S. actinostigma*

1. **Schefflera cabalionii** Lowry, *sp. nov.* — Fig. 1.

Arbores andromonoicae, foliis compositis digitatis, 35-75 cm longis; foliolis (5-)7-11 ellipticis ovatis, 12-28 × 6-11 cm, petiolo 20-42 cm longo, a lenticellis pustulosis ad basin instructo; stipula ligulata circa 2 cm longa. Inflorescentia, in umbella composita, ut videtur lateralis sed vero terminalis secundum gemmae axillaris excrescentiam; axibus secundariis circa 3-5 in longitudinem ad 10-12 cm aequans, umbellulis circa 12-16-floris, pedicellis 1.5-2 cm longis. Petala 5, elliptica ovata, 1.5-2 mm crassa, 7-9 mm longa. Stamina circa 250, in orbes circa 5. Ovarium, carpellis 10-12, a disco nectarifero profonde concavo-infundibuliforme superato; stylis nullis, stigmatibus bilabiatis in disco sessilibus. Fructus ellipsoido-urniformis, 3-3.5 × 1.8-2 cm, in sicco valde costato, a toro conspicuo dilatato, instructo.

Andromonoecious (?) trees. Leaves 35-75 cm long, leaflets (5-)7-11, subcoriaceous, elliptic-ovate, 12-28 × 6-11 cm, the primary vein slightly raised above, prominent beneath, the secondary veins ca. 20-40 per side, prominent above and beneath, curving slightly from the midvein and strongly arcuated towards the margin, those toward the apex sometimes curving back around to the adjacent vein, tertiary veins prominent, forming a dense network, the apex broadly acute to nearly obtuse and often somewhat acuminate, the margin entire, thickened

and minutely revolute, the base attenuate; petiolules stout, 1.5-5 cm long; petiole stout, 20-42 cm long, the base clasping and enlarged, densely pustular lenticellate, the ligulate stipule ca. 2 cm long. Inflorescence a compound umbel, morphologically terminal, but probably appearing lateral (at least in fruit) due to retarded development and concurrent rapid extension growth of an adjacent axillary bud, erect to spreading, the primary axis very short (absent?), the secondary axes (peduncles) ca. 3-5, about 10-12 cm long at anthesis and in fruit, corticate lenticellate towards the base, pustular lenticellate at the top, umbellules with ca. 12-16 flowers, some of which may be functionally staminate, the rest hermaphroditic and presumably protandrous, the pedicels stout, short in bud, expanding to 1.5-1.8 cm long at anthesis, and to 2 cm in fruit, subtended by an involucel of ca. 7-9 stiff, early caducous, deltoid-lanceolate bractlets each ca. 3-5 mm long. Calyx very broadly cupuliform to nearly flat, the rim entire, thick, undulate. Corolla hemispheric to depressed ovoid in bud, with a slightly pointed apex, the petals 5, 1.5-2 mm thick, elliptic-ovate, 7-9 mm long. Stamens ca. 250 in hermaphroditic flower (mature staminate flowers unknown), in about 5 series, the filaments slender, ca. 3.5-4 mm long, the anthers narrowly oblong-elliptic, ca. 2.5 mm long, with 4 thecae. Ovary 10-12-carpellate, ca. 1.5 mm high and narrowly obconical at anthesis, surmounted by a deeply concave-funnelform nectar disk concealed by the stamens, styles wanting, the 10-12 narrowly elliptic, bilabiate stigmas sessile on the disk. Mature fruit ellipsoid-urniform, 3-3.5 cm high, 1.8-2 cm wide, strongly ribbed when dry, with the persistent calyx and scars of the petals and stamens forming an evident, flared collar around the enlarged disk.

TYPE : *Veillon 4031 "A"*, Vanuatu, Santo, crête direction Voutmele, 1200 m (holo-, P!; iso-, NOU!).

ADDITIONAL MATERIAL. — SANTO : Crête direction du Voutmele, 1350 m, *Veillon 4031 "B"* (NOU). Cumberland, entre rivière Piamégou et Piamaéto, 900-1200 m, *Cabalion 889* (PVNH); *901* (NOU, PVNH). Pialupup, 900 m, *Bourdy 317* (BISH, K, NOU, NSW, P, PVNH).

As noted above, *Schefflera cabalionii* is the first species belonging to the closely related group of taxa often treated under the segregate genus *Plerandra* to be collected in Vanuatu. It is easily distinguished from its Fijian relatives by its complete lack of styles and its deeply concave disk. The presence of approximately 250 stamens in the hermaphroditic flowers of *S. cabalionii* further separates it from most Fijian species; only *P. grayi* Seem. and *P. pickeringii* A. Gray (combinations in *Schefflera* to be made elsewhere) have as highly polymerous an androecium, but the former has much smaller fruits, while the latter has a highly evident, protracted stylopodium (SMITH & STONE, 1968; SMITH, 1985).

The relationships between *S. cabalionii* and its allies in New Guinea and the Solomon Islands are less easily assessed, since no detailed treatment is yet available for the latter. A careful examination of the rather considerable holdings in a number of herbaria, especially at Kew and Leiden, have not, however, revealed a single specimen that exhibits a set of characters even vaguely resembling those of *S. cabalionii*. Furthermore, none of the published descriptions for species of *Plerandra* from New Guinea and the Solomon Islands matches the available specimens of the new taxon from Vanuatu.

According to SMITH & STONE (1968), all members of the *Plerandra* assemblage known to them were thought to be either "polygamo-dioecious" (i.e., presumably functionally dioecious, but with a certain degree of sexual inconstancy) or "polygamo-monoecious" (i.e., almost certainly andromonoecious) (cf. SCHLESSMAN et al., in press). Although it is not possible to determine the sexual system of *S. cabalionii* with certainty from the available material,

Fig. 1. — **Schefflera cabalionii** : **A**, bud × 1.5; **B**, bud with 3 petals removed × 1.5; **C**, leaf × 0.4; **D**, mature fruits × 0.5; **E**, branch in fruit × 0.05.

andromonoecism appears to be the most likely; one collection (*Veillon 4031 "B"*) has two detached inflorescence branches, one of which bears flowers that are much smaller than the others and could well represent male forms. This conclusion is, however, based on the assumption that the two branches were taken from the same individual. In any case, more detailed observations on the sexual system of this species, as well as nearly all other *Araliaceae*, are badly needed.

Schefflera cabalionii is known only from the island of Santo, where it has been collected in wet forest between about 900 m and 1350 m altitude. This impressive and beautiful species is named in honor of Monsieur Pierre CABALION, whose intensive collecting efforts throughout Vanuatu, conducted between 1979 and 1986 while stationed as ORSTOM's resident botanist in Port Vila, represent one of the most important recent contributions to our knowledge of the archipelago's flora.

2. **Schefflera neo-ebudica** Guillaumin

Bull. Mus. Hist. Nat. (Paris), Sér. 2, 9 : 289 (1937). Type : *Kajewski 114*, Vanuatu, Tanna, Lenakel (lecto-, P!; isolecto-, A (mounted on 2 sheets)!, K (mounted on 2 sheets)!, NY!; designated by SMITH & STONE, J. Arnold Arbor. 49 : 482, 1968).

Hermaphroditic trees 3-6(-10) m tall. Leaves (30-)35-50-(-60) cm long; leaflets (7-)9-11, membranous to papyraceous, elliptic to elliptic-obovate or elliptic-rhomboid, often narrowly so, (6.5-)8-30 × (2.5-)3-10 cm, the primary vein flush to slightly raised above, prominent beneath, the secondary veins ca. 8-14 per side, somewhat obscure above, prominent beneath, curving slightly from the midvein, arcuating and usually branching toward the margin, the branches terminating on the teeth, the apex narrowly acute to acuminate or subcaudate, the margin coarsely serrate-dentate (to deeply lacerate in juvenile foliage), minutely revolute, the teeth often spinulose, the base attenuate; petiolules (1.5-)2-4.5 cm long; petiole slender to stout, (9-)15-35(-40) cm long, clasping and somewhat enlarged at the base, the margins coriaceous. Inflorescence morphologically terminal, but appearing lateral due to retarded development and concurrent rapid extension growth from an adjacent axillary bud, erect to spreading or pendant, the primary axis rather stout, often somewhat corky lenticellate, (12-) 25-40 cm long, the secondary axes (8-)16-22, scattered or irregularly grouped (especially at the top), 5-18 cm long, expanding in fruit, each subtended by an adaxially concave, lanceolate-subulate bract to 4 mm long, and bearing (5-)12-30(-34) scattered, racemosely arranged umbellules, the peduncles (3-)3.5-8 mm long, each subtended by a small, lanceolate-subulate bractlet to 2 mm long and bearing 4-8 hermaphroditic, protandrous flowers, the pedicels 1.5-4(-5) mm long, with an involucel of as many minute, reflexed bractlets (occasionally 1-2 flowers borne on the peduncles slightly below the others). Calyx broadly cupuliform, ca. 0.5 mm high at anthesis, the rim with 5(-6) minute, deltoid lobes. Corolla ovate-deltoid and with an acute apex in bud, the petals 5, spreading to recurved at anthesis, broadly ovate to deltoid, 1.5-2 mm long. Stamens 5, ascending to spreading at anthesis, the filaments ca. 1 mm long, the anthers ca. 0.5 mm long, with 4 thecae. Ovary (4-)5(-6)-carpellate, broadly cupuliform at anthesis, styles (4-)5(-6), united only at the base, 0.1-0.2 mm long and with the free arms erect at anthesis, recurving and elongating in fruit to ca. 1 mm long. Mature fruit cream white, globose to oblate, 3-3.5 mm high, 3-4 mm wide, strongly ribbed when dry, with an evident ring at the

base of the expanded nectar disk, the ovary thus appearing only 2/3-3/4 inferior, the base truncate.

ADDITIONAL MATERIAL. — BANKS ISLANDS : GAUA : Sentier menant au Lac Letes, *Bourdy 924* (PVNH). VANUA-LAVA : Forêt de crête, 550 m, *Morat 7475* (NOU, P, PVNH). Crête, rive gauche de la Chelva, 200 m, *Veillon 5518* (NOU). Crête, 400 m, *Veillon 5533* (NOU, P). — SANTO : Between Ladhogh and Turworsoksok, *I. & Z. Baker 138* (BM). Au-dessus d'Ipayato, sur le sentier de Pic Santo, *Bourdy 1026* (P, PVNH). Vallée de la Pia-lapa, col à 1240 m débouchant sur la côte Ouest, *Cabalion 465* (NOU, P). Mt. Tabwemasana, 1100 m, *Cabalion 2843* (BISH, K, NOU, P, PVNH) ; contrefort N.O., 1700 m, *J. Raynal RSNH 16351* (K, NOU, PVNH) ; crête N.O., près du sommet, 1600 m, *Veillon 2445* (NOU) ; vers le premier sommet, 1600-1700 m, *Veillon RSNH 4552* (K, P, PVNH). Nokovula-Kerepua, 1070 m, *Cabalion 2869* (P, PVNH). Vallée de la Pialoraï, 400-550 m, *Morat 6427* (MO, NOU, P). Vers la Cascade, *Schmid 235* (NOU, P). — MAEWO : Saritamata, 400 m, *Bourdy 694* (K, NOU, P, PVNH). — PENTECOST : Entre Kumre et Lasup, 600 m, *Aubert de la Rüe s.n.* (A, P). Entre Tealing et Lalak, *Aubert de la Rüe s.n.* (P). Melsisi, village Taraibé, 400 m, *Cabalion 784* (NOU, P). Est de Tansip, 600 m, *Morat 5207* (MO, NOU, P, PVNH). Baie Homo à Baie Barrier, 200 m, *Morat 5420* (MO, NOU, P). — MALEKULA : South West Bay entre Lenbongbong et Lendemboi, *Bourdy 841* (NOU, P, PVNH). — AMBRIM : Mt. Touo, 1000 m, *Aubert de la Rüe s.n.* (P). — NGUNA : Pente E. du volcan, 300 m, *Cabalion 912* (NOU). — EFATE : Ouest de Bernier, 450 m, *Cabalion 1007* (PVNH). Hills SE of Undine Bay, *Morrison s.n.* (P). — ERROMANGA : Mt. Fedmoghum, *Cabalion 1424* (PVNH). Sommet du Rantop, 862 m, *Cabalion 2140* (NOU, PVNH). Vallée de la Nouankao, au N du camp du km 17, *J. Raynal RSNH 16254* (K, NOU, PVNH). Without precise locality, 200-300 m, *Schmid 3158* (NOU). — TANNA : In silva montana, 600-700 m, *Bernardi 13102* (G, P). Mt. Toukousméreu, 19°35′ S, 169°23′ E, 950-1084 m, deinde per cacumen et per semitam meridionalem usque ad Ikakakak, Yankwanénéay, atque rursus ad Yanehoop, *Bernardi 13166* (G) ; 1000 m, *Green 1236* (A, K, NOU, P, PVNH) ; flanc E, 600 m, *Morat 5908* (NOU, P), *Morat 6083* (NOU, P). Enniou, *Cabalion 1552* (PVNH). S.E., colline de Simrap au NW d'Itapoua, 600 m, *J. Raynal RSNH 16202* (K, NOU, PVNH). Without precise locality, 500 m, *Schmid 3157* (K, NOU). Without precise locality, *Schmid 3543* (NOU). — ANEITYUM : In vicinioribus Anawounamalo per semitam ad rivum Inwa Lelgey, 10-180 m, *Bernardi 12975* (G, K, L). Entre Port Patrick et Ounmetch, *Bourdy 398* (NOU, P, PVNH). Nezwon Aniopré (contrefort N de l'Ougapnaerek), 500 m, *Cabalion 1969* (NOU, PVNH). Anelgauhat Bay, 300 m, *Kajewski 845* (A, K, NY). Anumaj to Ithug, *Morrison s.n.* (K). Versants sud, forêt de pente, 450 m, *Schmid 3922* (NOU, P).

Schefflera neo-ebudica is part of a well defined group of seven species occurring in the southwest Pacific. This assemblage, which includes the type of the genus (i.e., the type of *S. digitata* J. R. & G. Forst. from New Zealand) and thus would comprise *Schefflera* in the strictest sense, further includes the following endemics : *S. euthytricha* A. C. Smith and *S. vitiensis* (A. Gray) Seem. from Fiji, *S. samoensis* (A. Gray) Harms from Samoa, and three New Caledonian species, *S. vieillardii* Baillon, *S. candelabra* Baillon and *S. pseudocandelabra* R. Viguier.

In Vanuatu *S. neo-ebudica* is one of the most commonly collected *Araliaceae*, occurring in various primary and secondary forest types from near sea level to well over 1200 m.

3. **Schefflera vanuatua** Lowry, *sp. nov.* — Fig. 2.

Arbores andromonoicae, foliis compositis digitatis, 15-30 cm longis ; foliolis 5-9 ellipticis vel elliptico-ovatis, (3.5-)5-12 × (2-)3-6.5 cm ; petiolo (6-)8-20 cm longo, a lenticellis pustulosis ad basin instructo, stipula ligulata ample ovata 1 cm longa. Inflorescentia, in umbella composita, terminalis erecta, axibus secundariis 4(-5?) in longitudinem ad 4-6.5 cm aequans, alia ab umbellula una terminata, alia in axes tertiarios 3(-4?) umbellulas 5-8(-10?) floras ferentes, magis divisa. Pedicella 1.2-2 cm longa. Flores staminati, petalis 5, 2.5 mm longis. Flores hermaphroditos non vidi. Stamina 5. Ovarium, carpellis circa 7, stylis in stylopodium rostriforme 1.5-3 mm longum omnino adnatis. Fructus juvenalis turbinatus, 5-7.5 × 4-5 mm, a disco nectarifero depresso conico, instructo. Fructus maturus ignotus.

Andromonoecious trees, with a strong carrot-like odor (evident in rehydrated material). Leaves 15-30 cm long; leaflets 5-9, papyraceous, elliptic to slightly elliptic-obovate, (3.5-)5-12 × (2-)3-6.5 cm, the primary vein slightly raised above, prominent beneath, the secondary veins numerous, ca. 25-40 per side, somewhat obscure, parallel, straight throughout most their length, then curving slightly toward the margin, tertiary veins obscure, the apex acute and shortly acuminate, the margin entire to remotely crenate, undulate, minutely thickened and revolute, the base attenuate; petiolules 1.5-3.5 cm long; petiole rather stout, (6-)8-20 cm long, the base clasping, enlarged, evidently pustular lenticellate, the ligulate stipule broadly ovate, acute, ca. 1 cm long, the margins scarious. Inflorescence a terminal, erect, compound umbel, the primary axis very short, the secondary axes 4(-5?), 4-6.5 cm long, either terminating in an umbellule or further divided into 3(-4?) tertiary axes each 5-6.5 cm long, umbellules bearing ca. 5-8(-10?) flowers, some staminate, the others hermaphroditic and presumably protandrous, the pedicels 1.2-2 cm long (somewhat shorter in staminate flowers). Calyx broadly cupuliform, the rim narrow, scarious, undulate. Corolla of staminate flowers broadly rounded-conic in bud, the petals 5, triangular to widely deltate, 2.5 mm long, unknown from hermaphroditic flowers, but likely somewhat larger. Stamens 5, in staminate flowers the filaments slender, ca. 2-2.5 mm long, the anthers oblong-elliptic, 1.5-1.8 mm long, with 4 thecae, unknown from hermaphroditic flowers. Ovary ca. 7-carpellate, styles fully united to form an evident, persistent, obfunnelform, rostriform stylopodium ca. 1.5-3 mm long. Immature fruit turbinate, 5-7.5 mm high, 4-5 mm wide, often irregularly indented when dry, but not evidently ribbed, with a prominent calyx rim at the edge of the depressed conic nectar disk, the base obtuse to slightly attenuate, mature fruit unknown.

TYPE : *Kichikichi RKNH 48*, Vanuatu, Aneityum, Entre Anelggauhat et l'Inrero, 400-500 m (holo-, P!, iso-, K!, NOU!, PVNH).

ADDITIONAL MATERIAL. — Aneityum, Valley of Nitchlemhang, near Anelgaohat (= Anelggauhat), 17 Jan 1979, *Gilbert 48* (K).

Schefflera vanuatua appears to be closely related to *S. seemanniana* A. C. Smith of Fiji, and to *S. gabriellae* Baillon and *S. pancheri* Baillon, both of New Caledonia, which together comprise the "*Gabriellae*" group. *Schefflera vanuatua* can, however, be readily distinguished from its relatives by a number of features : it differs from *S. seemanniana* in having larger and broader leaflets; from *S. gabriellae* by its more slender stylopodium and almost certainly smaller fruits, as well as its smaller leaves; and from *S. pancheri* by its more numerous leaflets.

The New Caledonian members of the "*Gabriellae*" group are characterized by a strong, carrot-like odor that is present in nearly all parts of the plant. This same distinctive smell was observed in rehydrated material of *S. vanuatua*, and presumably also occurs in *S. seemanniana*, although it has not been reported in the latter.

The inflorescence structure and sexual system appear to be quite uniform within this group of taxa. All of the species have basically compound umbellate inflorescences in which the secondary axes either terminate in an umbellule, or are further divided into tertiary axes each of which bears an umbellule. In general, the individual umbellules contain either a mixture of protandrous, hermaphroditic flowers and staminate flowers, or are entirely composed of one of these types. In any case, a given inflorescence will almost always contain at least some of both kinds of flowers. The New Caledonian species, which have been studied in

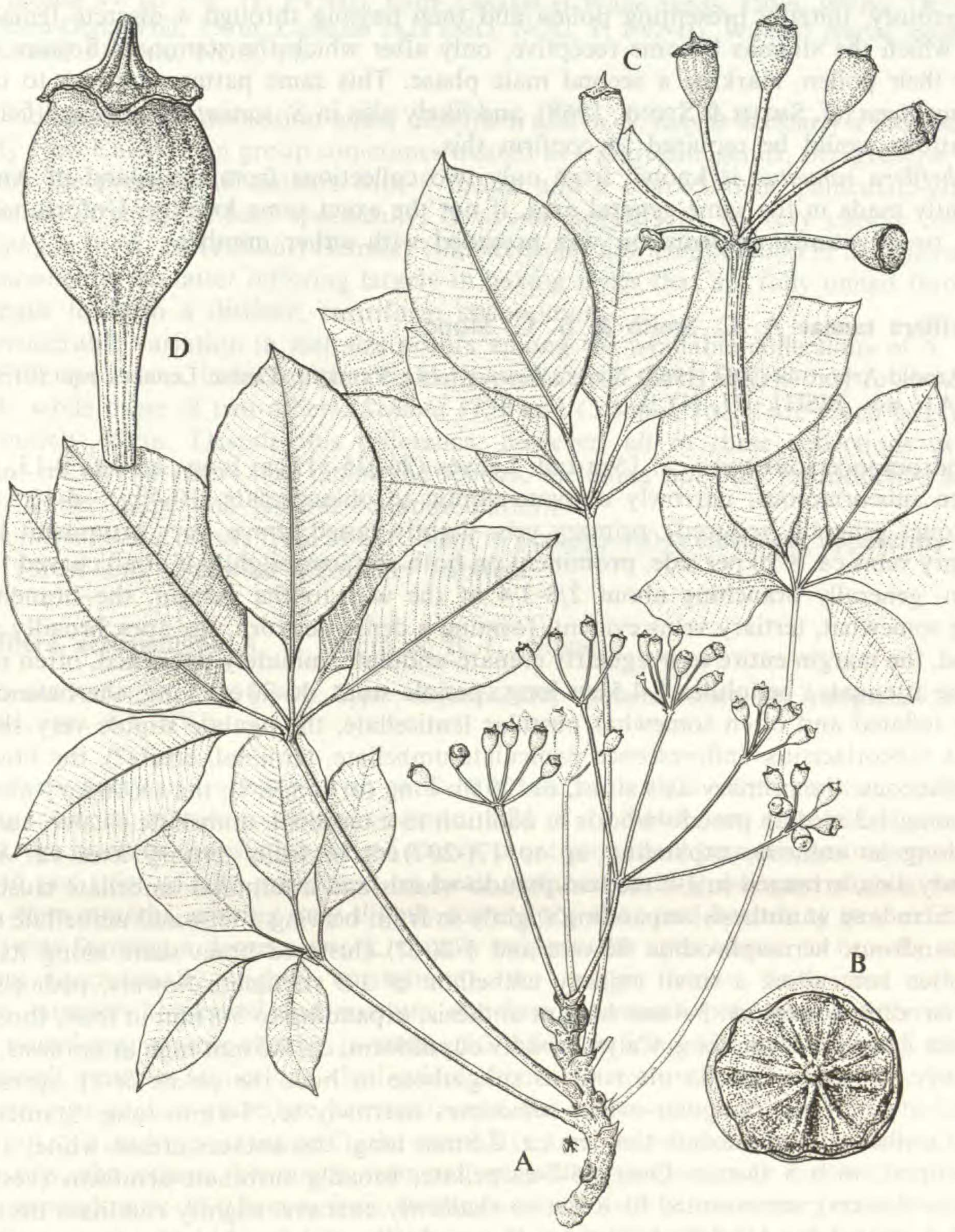

Fig. 2. — **Schefflera vanuatua** : **A**, branch with immature fruit × 0.4; **B**, fruit, top view × 6.5; **C**, umbellule in fruit × 1.5; **D**, fruit, side view × 6.5.

some detail (cf. SCHLESSMAN et al., in press), exhibit a pattern of 1 1/2-cycle protandry, or duodichogamy (LLOYD & WEBB, 1986). In this syndrome, the hermaphroditic flowers open synchronously, initially presenting pollen and then passing through a discrete female stage during which the stigmas become receptive, only after which the staminate flowers open to present their pollen, marking a second male phase. This same pattern appears to occur in *S. seemanniana* (cf. SMITH & STONE, 1968), and likely also in *S. vanuatua*, although field-based observations would be required to confirm this.

Schefflera vanuatua is known from only two collections from the island of Aneityum, apparently made in the same general area, if not the exact same locality. Unfortunately, no habitat or elevational information was provided with either number.

4. **Schefflera tannae** A. C. Smith & B. C. Stone

J. Arnold Arbor. 49 : 483 (1968). Type : *Kajewski 131*, Vanuatu, Tanna, Lenakel, rain forest, 200 m (holo-, A!; iso-, BISH!, K!, NY!).

Andromonoecious trees ca. 15 m tall. Leaves (26-)35-115 cm long; leaflets 9-13, papyraceous to subcoriaceous, narrowly obovate-elliptic to oblanceolate, 10-40 × 4-10.5 cm (the lateral ones generally reduced), primary vein slightly raised above, very prominent beneath, secondary veins ca. 8-20 per side, prominent on both surfaces, slightly if at all curved from the midvein, generally branching about 2/3-3/4 of the way to the margin, the branches then curving somewhat, tertiary veins evident, forming a dense network, the apex broadly acute to rounded, the margin entire to irregularly crenate-undulate, minutely thickened, often revolute, the base attenuate; petiolules 1-4.5 cm long; petiole stout, 15-70 cm long, the base clasping, slightly inflated and often somewhat pustular lenticellate, the ligulate stipule very short, the margins subcoriaceous. Inflorescence paniculate-umbellate, terminal, erect (?), the bracts very early caducous, the primary axis stout, ca. 20 cm long (or longer ?), the secondary axes ca. 8-12, forming 1-2 median pseudo-whorls in addition to a terminal, umbellate cluster, each ca. 7-12 cm long at anthesis, expanding up to 17(-20 ?) cm in fruit, tertiary axes ca. 8-14 per secondary axis, arranged in 1-2 median pseudo-whorls and a terminal umbellate cluster, each ca. 1-1.5 cm long at anthesis, expanding slightly in fruit, bearing a terminal umbellule of ca. 5-10 protandrous, hermaphroditic flowers and 1-2(-3?) clustered bract scars along its length, these often subtending a small axillary umbellule of 3-5 staminate flowers, pedicels of the hermaphroditic flowers ca. 3-4 mm long at anthesis, expanding to 5-8 mm in fruit, those of the staminate flowers 1-2 mm long. Calyx broadly cupuliform, ca. 0.5 mm high at anthesis, the rim irregularly undulate. Corolla obovoid to subglobose in bud, the petals 5(-7), spreading to recurved at anthesis, triangular-ovate, sometimes narrowly so, 3-4 mm long. Stamens 5(-7), erect at anthesis, the filaments slender, ca. 2.5 mm long, the anthers cream white, 1.8-2 mm long, elliptic, with 8 thecae. Ovary 5-7-carpellate, broadly turbinate-urniform (vestigial in staminate flowers), surmounted by a flat to shallowly concave, slightly ruminate nectar disk, styles 5-7, united for 1/2-2/3 of their length, ca. 0.6-1 mm long, with the free arms erect at anthesis, diverging and elongating slightly in fruit (vestigial and undivided in staminate flowers). Mature fruit subglobose or oblate to depressed ovoid, 4-5 mm high, 4.5-6 mm wide, strongly ribbed when dry, with a small ring surrounding the somewhat contracted nectar disk, the base truncate to depressed-concave.

ADDITIONAL MATERIAL. — ERROMANGA : Piste vers 100 m, Camp 2, *Veillon 2931* (NOU). Without precise locality, crêtes, 200-300 m, *Schmid 3159* (NOU). — TANNA : Bord de route, Lenakel-Volcan, 300-600 m, *Cabalion 997 bis "A"* (P, PVNH). Entre Lenakel et White Sands, 150 m, *997 bis "B"* (NOU). Route Eniou-Green Hill, 350 m, *Cabalion 1618* (MO, NOU, P, PVNH). Without precise locality, 200-500 m, *Schmid 3160* (K, NOU, P).

As indicated in the discussion under *Schefflera* above, *S. tannae* is clearly a member of the primarily New Caledonian group sometimes treated as a segregate genus, *Dizygotheca*, defined largely by the presence of anthers with 8 thecae and a characteristic paniculate-umbellate inflorescence structure. More specifically, *S. tannae* appears to be very closely related to *D. leptophylla* (hort. ex Truffaut) Hemsley (the necessary new combination in *Schefflera* will be made elsewhere), the latter differing largely in having styles that are fully united throughout their length to form a distinct, rostriform stylopodium.

Considerable variation in leaf size occurs among the available collections of *S. tannae*. Most of the specimens, including the original type material, have leaflets only to about 25 cm in length, while those of two others (*Schmid 3159* and *Cabalion 1618)* are much larger, up to approximately 40 cm. Despite this difference, however, all of these collections exhibit a consistent set of characters that define the species, including not only reproductive features, but also leaflet shape and general venation pattern.

Schefflera tannae occurs from about 150 m to perhaps 400 m elevation, apparently in both primary forest and somewhat secondary habitats.

5. **Schefflera actinostigma** A. C. Smith & B. C. Stone

J. Arnold Arbor. 49 : 486 (1968). Type : *Kajewski 758*, Vanuatu, Aneityum, Anelgauhat Bay, 60 m (holo-, A!; iso-, K!, NY!).

Andromonoecious treelets to trees ca. 2-10 m tall. Leaves (25-)40-80 cm long; leaflets (5-)7-11, papyraceous, elliptic to elliptic-obovate, 8-25 × (3.5-)4-8.5 cm (the lateral ones often reduced), the primary vein slightly raised above, more prominent beneath, secondary veins ca. (12-)15-45 per side, usually prominent on both surfaces, arching outward slightly from the midvein, then straight, curving only slightly toward the apex and branching in the distal 1/4, tertiary veins forming a dense network, usually evident, the apex obtuse to broadly acute or acuminate (occasionally slightly emarginate), the margin entire, finely and irregularly undulate, minutely thickened and revolute, the base attenuate; petiolules slender to rather stout, 2-6 cm long; petiole slender to stout, (12-)15-55 cm long, the base clasping, enlarged, often sparsely pustular lenticellate, the ligulate stipule stout, truncate, the margins coriaceous. Inflorescence paniculate-umbellate, terminal, erect, the bracts early caducous, the primary axis rather stout, 5-9 cm long (or longer ?), the secondary axes ca. 5-7, 1-2 borne laterally along the primary axis, the others forming a terminal, umbellate cluster, each ca. 4-12 cm long at anthesis, expanding to 15-25 cm in fruit, tertiary axes ca. 4-10 per secondary axis, arranged in 1(-2) median pairs or pseudo-whorls and a terminal, umbellate cluster, each ca. 1-4 cm long at anthesis, expanding to (2-)3-7 cm in fruit, bearing a terminal umbellule of ca. 4-12 protandrous, hermaphroditic flowers and 1(-2) lateral umbellules of ca. 6-10 staminate flowers, pedicels of the hermaphroditic flowers 4-6 mm long at anthesis, expanding to 5-9 mm in fruit, those of the staminate flowers ca. 1-3 mm long. Calyx rather well developed, cupuliform, ca. 1-

1-1.3 mm high at anthesis (smaller in staminate flowers), expanding slightly in fruit, the rim undulate and shallowly 5-toothed. Corolla rounded-obovoid to subglobose in bud, petals 5, triangular-ovate, 3.5-4 mm long in hermaphroditic flowers, 2.5-3 mm long in staminate flowers. Stamens 5, the filaments stout, short, ca. 1.5 mm long, the anthers ca. 2.5 mm long, elliptic, with 8 thecae. Ovary (5-)7-9-carpellate, urniform (vestigial in staminate flowers), surmounted by a flat to shallowly concave nectar disk, styles (5-)7-9, united for 1/4(-1/2) of their length, ca. 1 mm long at anthesis, expanding in fruit to 1.5-1.8 mm, the free arms erect and appressed in bud, diverging slightly at anthesis, then spreading horizontally to recurving in fruit (vestigial and undivided in staminate flowers). Mature fruit ovoid to ovoid-subglobose, 7-8 mm high, 6-6.5 mm wide, strongly ribbed when dry, the enlarged, persistent calyx forming an evident collar around the nectar disk, the base truncate.

ADDITIONAL MATERIAL. — ERROMANGA : Pente Sud du Mt. Fedmoghum, 636 m, *Cabalion 1422* (NOU); 250 m, *Cabalion 1476* (NOU, PVNH). Entre Ipota et Raupunmungo, *Cabalion 3027* (NOU, P, PVNH). Nouankao River and vicinity, 150 m, *Chew 121* (K, NSW, P, PVNH). Ulenarap South River, 200 m, *M. S. Johnson 22* (K). Mt. Ménèl, 300-500 m, *Schmid 4737* (NOU). — ANEITYUM : Anelgohoat, 100 m, *Bourdy 365* (K, NOU, P, PVNH); 150 m, *Bourdy 376* (NOU, P, PVNH). Entre Oumetch et Port Patrick, 450 m, *Bourdy 399* (NOU, P, PVNH). Descente sur Oumetch, *Bourdy 415* (NOU, P, PVNH). Crête près d'Inrero, 700 m, *Cabalion 2995* (K, NOU, P, PVNH). Without precise locality, 400-500 m, *Schmid 3542* (NOU). Inrero, 400 m, *Schmid 3745* (NOU, P); *Schmid 3746* (NOU, P).

Along with the preceding species, *Schefflera actinostigma* clearly belongs in the "*Dizygotheca*" assemblage, as it exhibits all this group's distinctive features. *Schefflera actinostigma* is very closely related to *S. toto* Baillon of New Caledonia, although the latter has longer pedicels, more coriaceous leaflets, and fruits that are generally elliptic to subglobose rather than ovoid. These differences may prove not to be sufficient to warrant retaining the taxa as distinct at the species level, although a final decision will have to await the completion of my revision of *Araliaceae* for the Flore de la Nouvelle-Calédonie et Dépendances.

Schefflera actinostigma occurs in primary forest, from about 75 m to 700 m elevation. Flowering material has been collected in August and November, while fruiting specimens are available from August and November as well as January and February.

SPECIES OF UNCERTAIN IDENDITY

Schefflera kerchoveiana (Veitch ex W. Richards) Frodin & Lowry

In LOWRY, MILLER & FRODIN, Baileya 23 : 9 (1989).

Aralia kerchoveiana VEITCH ex W. RICHARDS, Gard. Chron. II (9) : 430 (1878); TRUFFAUT, Rev. Hort. 63 : 224, *fig. 55* (1891).

— *Dizygotheca kerchoveiana* (VEITCH ex W. RICHARDS) N. TAYLOR, *in* L. H. BAILEY, Stand. Hort., Cyclop. Hort., ed. 2, 2 : 1062 (1914).

Schefflera kerchoveiana was based on cultivated material likely collected by P. C. M. VEITCH during his voyage to the South Seas in 1876. LOWRY et al. (1989) have summarized the available information on this species, indicating that it is most likely native to Vanuatu. Although *S. kerchoveiana* appears to be similar to both to *S. actinostigma* and *S. tannae*, a

determination of whether it is conspecific with either of them unfortunately can not be made at this time due to a complete lack of fertile, adult material. Thus, until more adequate specimens are collected that would permit an accurate description of *S. kerchoveiana*, it is not possible to place this species with certainty among the *Schefflera* of Vanuatu.

4. **DELARBREA** Vieillard

Bull. Soc. Linn. Normandie 9 : 342 (1865).
Porospermum F. MUELL., Fragm. 7 : 94 (1870).

Hermaphroditic or andromonoecious, glabrous, unarmed treelets or small trees. Leaves imparipinnate, alternate, clustered at branch ends; leaflets entire to remotely dentate (to deeply lacerate in juvenile foliage of some species); rachis not articulated; petiole with an expanded, clasping base with membranous or scarious margins. Inflorescence a panicle of umbellules, terminal, erect or pendent, the pedicels free or basally united into groups of 2-4, articulated below flowers. Flowers hermaphroditic and protandrous, often also functionally staminate, actinomorphic. Sepals 5, united below into a short tube, the lobes valvate. Petals 5, imbricate, keeled within, narrowly clawed toward the base. Stamens 5, the anthers with 4 thecae, dorsifixed. Ovary inferior, 2-carpellate, surmounted with a small, depressed conic nectar disk, the styles 2, free, erect at anthesis, spreading as the clavate stigmas become receptive. Fruit a drupe, crowned by the persistent calyx and styles; exocarp fleshy, with large secretory oil ducts, the endocarp papery; endosperm with shallow longitudinal grooves, not ruminate.

Delarbrea, a well defined genus with six species (two of which are divided into two subspecies each), is centered in New Caledonia, with one species endemic to Queensland, Australia; only *D. paradoxa* subsp. *paradoxa* is more widely distributed, extending through Vanuatu and the Solomon Islands across Malesia (LOWRY, 1986*a*, 1986*b*). The genus is part of a closely related group that also includes the New Caledonian endemics *Myodocarpus* and *Pseudosciadium*. This assemblage, defined by several characters, including the presence of very characteristic secretory oil ducts in the fruit, probably represents a particularly old lineage within *Araliaceae* (LOWRY, 1986*a*).

1. **Delarbrea paradoxa** Vieillard

Bull. Soc. Linn. Normandie 9 : 343 (before 7 Apr 1865). Type : *Vieillard 627 "A"*, New Caledonia, Ad montes, prope Wagap (lecto-, P!; isolecto-, BM!, K!, NSW!, P!; designated by LOWRY, Allertonia 4 : 176, 1986).

subsp. **paradoxa**

Cupania juglandifolia SEEM., Fl. Vit. : 46 (Jun 1865). Type : *J. R. & G. Forster s.n.*, New Caledonia (lecto-, BM!; isolecto-, BM!, LIV!; designated by LOWRY, Allertonia 4 : 176, 1986).
Delarbrea lauterbachii HARMS, *in* K. SCHUM. & K. LAUTERB., Fl. Schutzgeb. Südsee : 485 (1900). Type : *Lauterbach 3034*, Indonesia, Moluccas, Kepulauan Banda, Bandanaira (= Bandaneira), Aug 1899 (holo-, B, presumably destroyed; iso-, L!).
Delarbrea paradoxa VIEILL. var. *balansae* VIGUIER, J. Bot. (Morot), Sér. 2, 3 : 55 (1910-1913, but distributed in 1925; cf. M. L. GREEN, Bull. Misc. Inform. 1928 : 155-156, 1928). Type : *Balansa*

2209a, New Caledonia, Collines ferrugineuses situées à l'embouchure de la rivière Ouaïlou (Houaïlou), (lecto-, P!; isolecto-, P!; designated by LOWRY, Allertonia 4 : 176, 1986).

Delarbrea paradoxa VIEILL. var. *macrophylla* VIGUIER, J. Bot. (Morot), Sér. 2, 3 : 55 (1925). Type : *Balansa 977*, New Caledonia, Bois des environs de Bourail, terrains schisto-feldspathiques (lecto-, P!; isolecto-, A!, P (3 sheets)!, Z!; designated by LOWRY, Allertonia 4 : 176, 1986).

Andromonoecious treelets or trees 1.5-10 m tall. Leaves (35-)40-70(-85) cm long; leaflets 11-19, narrowly ovate to elliptic-oblong, usually strongly folded adaxially along the midvein, dark green above and beneath, often appearing mottled when dry, with adjacent areas outlined by the evident tertiary venation of different colors, membranous to subcoriaceous, narrowly ovate or elliptic-oblong, often falciform, especially when pressed, 10-22 × (3.5-)4-8 cm, the lowermost reduced, the apex acute to obtuse, the margin entire, often undulate, to deeply lacerate or pinnatifid in juvenile foliage, the base truncate to cordate; petiolules 5-15 mm long; petiole terete, often lenticellate. Inflorescence pendent, covered throughout with a gray-brown, corky, exfoliating periderm, the bractlets 1-10 mm long, scarious, triangular or subulate to elliptic or linear-ovate, persistent or early caducous, the primary axis 35-60 cm long, 2-10 mm in diam. at the base, secondary axes 9-45, scattered, (3-)6-30 cm long, each with a terminal umbellule of hermaphroditic flowers and usually 1-15(-20) lateral umbellules of staminate or hermaphroditic flowers, when hermaphroditic occasionally also with 1-3 umbellules of usually staminate flowers borne along the peduncle, peduncles (tertiary axes) 0.5-4.5 mm long, umbellules 12-30(-40) mm in diam. (those with staminate flowers 6-12 mm), with (15-)20-40 flowers, bractlets of the secondary axes and involucre (3-)5-10 mm long, elliptic to linear-ovate, adaxially concave, early caducous, the pedicels (2.5-)3-10 mm long, often basally united in fascicles of 2-4(-5). Sepals yellow green, the lobes 0.5-0.8 mm long. Petals yellow green, 1.6-2.2 mm long. Filaments 1.5-2.2 mm long, yellow green, anthers 1-1.5 mm long. Ovary 1-1.6 mm long at anthesis, styles 0.8-1.2 mm long at anthesis, expanding slightly to 1.5(-2) mm in fruit (0.2-0.5 mm in staminate flowers). Mature fruit purplish black, globose to ovoid, 6-10 mm long, smooth or irregularly ribbed when dry.

ADDITIONAL MATERIAL. — BANKS ISLANDS : VANUA-LAVA : Sisiol, *Bourdy 901* (P, PVNH). Without precise locality, 200 m, *Kajewski 412* (A, BISH, BRI, K, NY, P). GAUA : Sentier qui mène au Lac Letes, 20 m, *Bourdy 921* (P, PVNH). — SANTO : Hog Harbour, *I. & Z. Baker 72* (BM); *295* (A, BM). Ouest vallée de la Poua, 800 m, *Cabalion 2892* (P, PVNH). Mt. Tabwemasana, *Bourdy 1223* (NOU, P, PVNH); *Gillison & Beveridge RSNH 3521* (A, K, NOU, NSW, P, PVNH); contrefort N.O., forêt de crête, 1600 m, *J. Raynal RSNH 16352* (K, NOU, NSW, PVNH). Vallée de la Pialapa, 420 m, *Suprin 324* (NOU, P); crête N.O., 1400 m, *Vieillon 2442* (NOU, P). — AOBA : Without precise locality, *Morrison s.n.* (K). — PENTECOST : Vallée au Sud de Melsisi, *Cabalion 1160* (NOU). — MALEKULA : Tisbel, *N. Hallé RSNH 6310* (P). — EPI : Mt. Savie, Baie Nelson, 450 m, *Aubert de la Rüe s.n.* (P). Côté Sud du relais radio, Burumba, *Cabalion 929* (NOU, P). — EFATE : Near Rentapao, 5 m, *Green RSNH 1096* (K, NOU, NSW, P, PVNH). Vallée de Port-Vila, *Levat s.n.* (P). — ERROMANGA : Fedmoghum Sud, 300 m, *Cabalion 1474* (NOU, P, PVNH). Potiraousak, 330 m, *Cabalion 1699* (NOU, PVNH). Ipota, *Cabalion 2160* (PVNH). Potnarhvin, bord de chemin, 800-1000 m, *Cabalion 2186* (PVNH). Nouankao River, 150 m, *Chew RSNH 124* (K, NOU, NSW, P, PVNH). Vicinity of Nouankao Camp, 150 m, *Green RSNH 1275* (K), *1277* (A, K, NOU, NSW, P, PVNH). Dillon Bay, sea level, *Kajewski 269* (A, BRI, K, NY, P, US). Summit of peak S from Dillon's Bay, *Morrison s.n.* (A, K). Au N du Camp du km 17, 450 m, *J. Raynal RSNH 16218* (K, NOU, NSW, PVNH). Without precise locality, 200-300 m, *Schmid 3156* (NOU). — ANEITYUM : Without precise locality, forêt néphéliphile de crête, 600 m, *Schmid 3921* (NOU, P). In vicinioribus Anawounamalo, malo per setitam ad rivum Inwa Lelgey, 10-180 m, *Bernardi 12945* (G, K, L, NOU, P). Ridge between Nichiemhang and Nepeso valleys, N.N.E. of Angelgashat, 200 m, *Chew RSNH 65* (K).

Delarbrea paradoxa subsp. *paradoxa* is by far the most common and wide-ranging member of the genus. Evidence suggests that it evolved in New Caledonia and reached areas to the north and west by long-distance dispersal, to which it appears to be well adapted (LOWRY, 1986*a*).

Throughout most of its range, *D. paradoxa* subsp. *paradoxa* occurs in rain forests, although in New Caledonia it occupies a broader range of habitat types. In Vanuatu, the subspecies is generally found from near sea level to about 600 m, although several collections have been taken from Mt. Tabwemasana on Santo from elevations ranging up to 1600 m. Flowering appears to peak between April and August, with fruiting generally from July to January.

5. POLYSCIAS J. R. & G. Forster

Gen. Pl. : 63 (1776).
Eupteron MIQ., Pl. Jungh. 3 : 423 (1855); Fl. Ind. Bat. I (1) : 762 (1856).
Nothopanax MIQ., Pl. Jungh. 3 : 425 (1855); Bonplandia 4 : 139 (May 1856); Fl. Ind. Bat. I (1) : 765 (1856).
Irvingia F. MUELL., Fragm. 5 : 17 (1865); *non* HOOK. f. (1860).
Botryopanax MIQ., Ann. Mus. Bot. Lugd.-Bat. 1 : 5 (1863).
Kissodendron SEEM., J. Bot. 3 : 201 (1865).
Tieghemopanax VIGUIER, Bull. Soc. Bot. France 52 : 305 (1905).
Bonnierella VIGUIER, Bull. Soc. Bot. France 52 : 314 (1905).
Palmervandenbroekia GIBBS, Arfak : 162 (1917).
Montagueia E. G. BAKER, *in* RENDLE et al., J. Linn. Soc., Bot. 45 : 291 (1921).
Gelibia HUTCH., Gen. Fl. Pl. 2 : 57 (1967).

Hermaphroditic, andromonoecious or dioecious, glabrous to tomentose or furfuraceous, unarmed shrubs or trees. Leaves imparipinnate to 2-3-pinnate (occasionally unifoliolate), alternate; leaflets entire to deeply divided; rachis generally articulated; petiole often with an expanded, clasping, alate leaf sheath at the base (lacking in some species). Inflorescence generally a panicle or corymb of umbellules, capitula or racemules, terminal, erect or pendent, the pedicels articulated below flowers. Flowers hermaphroditic and protandrous, or unisexual, actinomorphic. Sepals 4-5(-8 or more), usually forming an undulate or slightly lobed rim, often with a minutely dentate margin. Petals 4-5(-8 or more), valvate. Stamens 4-5(-8 or more), the anthers dorsifixed. Ovary inferior, 4-5(-8 or more)-carpellate, surmounted by a fleshy nectar disk, the styles as many as the carpels, free and erect at anthesis, then spreading as the stigmas become receptive, or united to form a rostriform stylopodium. Fruit a drupe, crowned by the persistent calyx rim and the styles or stylopodium; exocarp fleshy, the endocarp chartaceous; endosperm rugose, unevenly rough or fissured, rarely smooth.

Polyscias comprises about 150 species occurring throughout much of the Old World tropics, with centers of diversity in the Pacific Islands (especially New Caledonia), Malesia, and Madagascar. The genus is here considered to include species of *Araliaceae* with pinnate leaves and an articulated pedicel. As so defined, *Polyscias* includes a number of segregate genera, most of which appear to have been defined either on the basis of rather minor characters, or in an artificial manner using features that have evolved independently in several lineages. While some of these species groups probably deserve recognition as infrageneric taxa

(cf. PHILIPSON, 1979), they are not treated formally here for lack of a more complete analysis of relationships within *Polyscias*.

KEY TO THE SPECIES

1. Leaves once pinnate (occasionally unifoliolate in no. 5).
   2. Petiole smooth to the base, without an alate leaf-sheath.
      3. Leaves not exceeding 40 cm long, styles of the female flowers and fruits united for greater than half their length, forming an evident stylopodium ..... 1. *P. cissodendron*
      3′. Leaves greater than 75 cm long, styles free nearly to the base, not forming an evident stylopodium ..... 2. *P. schmidii*
   2′. Petiole bases with an alate leaf-sheath extending for ca. 1/5-1/3 of its length.
      4. Hermaphroditic flowers and fruits with 2 (rarely 3) styles and carpels; indigenous species.
         5. Flowers and fruits sessile or with a short pedicel less than 2 mm long. 3. *P. multijuga*
         5′. Flowers and fruits with a slender, filiform pedicel 7-20(-25) mm long. 4. *P. samoensis*
      4′. Hermaphroditic flowers and fruits with 3-5 (rarely 2) styles and carpels; cultivated species.
         6. Leaflets 1-5, blades widely elliptic to oblate or reniform, apex rounded, base shallowly cordate to convex (rarely rounded-truncate) ..... 5. *P. scutellaria*
         6′. Leaflets 5-15, blades elliptic to oblong, base and apex obtuse to acute or acuminate.
            7. Margins of the leaflets entire to coarsely lobed ..... 6. *P. cumingiana*
            7′. Margins of the leaflets sharply serrulate ..... 7. *P. guilfoylei*
1′. Leaves irregularly 2-3-pinnate, with evident marginal teeth.
   8. Leaflets variable in shape, but some generally elliptic to oblong, the marginal teeth rarely exceeding 5 mm long ..... 7. *P. guilfoylei*
   8′. Leaflets lanceolate, 3-6 times as long as broad, the marginal teeth irregular, at least some 5-10 mm long ..... 8. *P. fruticosa*

1. **Polyscias cissodendron** (C. Moore & F. Muell.) Harms

In ENGL. & PRANTL, Nat. Pflanzenfam. III (8) : 45 (1894). Type : Australia, Lord Howe Island (not seen).

Panax cissodendron C. MOORE & F. MUELL., Fragm. 7 : 96 (1870).

— *Tieghemopanax cissodendron* (C. MOORE & F. MUELL.) VIGUIER, Bull. Soc. Bot. France 52 : 311 (1905).

Panax myriophyllus BAILLON, Adansonia 12 : 152 (1878). Type : *Balansa 631*, New Caledonia, forêts situées au-dessus de la ferme modèle, près de Nouméa (holo-, P!).

— *Tieghemopanax myriophyllus* (BAILLON) VIGUIER, Bull. Soc. Bot. France 52 : 311 (1905).

Tieghemopanax microcarpus VIGUIER, Bull. Soc. Bot. France 52 : 110 (1905). Type : *Balansa 3378*, New Caledonia, forêts situées à l'ouest de Canala, vers 600 m (lecto-, P!; isolecto-, P!; here designated).

Polyscias monticola HARMS, Bot. Jahrb. Syst. 39 : 216 (1906). Type : *Schlechter 15605*, New Caledonia, auf den Bergen bei Ou Hinna, 700 m (holo-, B, presumably destroyed; iso-, BR!, G!).

— *Tieghemopanax monticola* (HARMS) VIGUIER, J. Bot. (Morot), Sér. 2, 3 : 68 (1910-1913, but distributed in 1925, cf. M. L. GREEN, Bull. Misc. Inform. 1928 : 155-156, 1928).

Montagueia haplostemon E. G. BAKER, *in* RENDLE et al., J. Linn. Soc., Bot. 45 : 291 (1921). Type : *Compton 1897*, New Caledonia, Poampai, forest margins, 1500 ft., shales (holo-, BM!).

Tieghemopanax neo-ebudarum GUILLAUMIN, J. Arnold Arbor. 12 : 264 (1931). Type : *Kajewski 291*, Vanuatu, Erromanga, Dillon Bay (lecto-, A!; isolecto-, BISH!, BRI!, K!, NY!, P!; designated by SMITH & STONE, J. Arnold Arbor. 49 : 444, 1968).

— *Polyscias neo-ebudarum* (GUILLAUMIN) B. C. STONE, Taxon 14 : 285 (1965).

Dioecious treelets or trees (1.5-)2-12 m tall (to 20 m outside Vanuatu). Leaves (9-)15-35 (-40) cm long; leaflets 5-13(-15), dark green above, paler beneath, papyraceous, ovate, sometimes narrowly so, the lateral ones often strongly oblique to nearly falciform, (3-)4-9 × (1.5-)2-5 cm, the apex acuminate (rarely acute), the margin coarsely crenulate to sub-entire, slightly thickened but rarely revolute, the base acute or obtuse to truncate or occasionally subcordate, often strongly oblique; petiolules 3-12 mm long; rachis unarticulated at petiolule bases; petiole 14-17(-18) cm long, without an alate leaf sheath at the base. Inflorescence terminal, erect, conical to rounded, glabrous to sparsely puberulent throughout, the bractlets and involucre very early caducous, lanceolate-subulate, 0.5-1.5 mm long, the primary axis 10-35 cm long, the secondary axes ca. 10-25, scattered, (3-)6-22 cm long (the upper ones reduced), the tertiary axes (peduncles) 6-30 per secondary axis, scattered throughout the distal 3/4, 5-20 mm long, each bearing a terminal umbellule of 5-9 flowers and often 1-3(-4) laterally arranged flowers (or rarely lateral umbellules), the pedicels of the pistillate flowers 2-4 mm long, 0.3-0.6 mm in diam., stiff, especially in fruit, those of the staminate flowers 0.5-2.5 mm long, 0.1-0.3 mm in diam., slender. Calyx cupuliform, 0.2-0.4 mm high, the rim undulate and occasionally irregularly 5-denticulate, hyaline. Corolla in bud narrowly triangular to acuminate in pistillate flowers, ovate to broadly ovate in staminate flowers, the petals 5 (very rarely 4), in pistillate flowers ascending to spreading at anthesis, pale green to yellowish, ovate to narrowly lanceolate, 0.8-1.2 mm long, in staminate flowers spreading to recurved or reflexed at anthesis, light green often tinged with yellow or pink, or deep red to purple, ovate to narrowly ovate and adaxially concave, 1-2.2 mm long. Stamens ascending at anthesis (lacking in pistillate flowers), the filaments 0.8-1.5(-1.8) mm long, the anthers yellow, 0.8-1.8 mm long. Ovary of pistillate flowers 2-carpellate, urniform-turbinate and 1.2-1.5 mm high at anthesis, vestigial and forming a slender stipe 0.6-2 mm long in staminate flowers; styles 2, united for greater than half their length to form an evident stylopodium, 0.8-1.1 mm long with the free arms erect to ascending at anthesis, expanding in fruit to 2-2.5 mm long as the free arms become divaricate to recurved (styles vestigial and undivided in staminate flowers). Mature fruit laterally compressed, medium to olive green, becoming dark purple to blackish, ovate or depressed-ovate to orbicular or oblate, 2.5-3.3(-3.5) mm high, 2.8-4 mm wide, the base sometimes subcordate, ribs well developed when dry.

ADDITIONAL MATERIAL. — BANKS ISLANDS : VANUA-LAVA : Au-dessus de la rivière Chelva, *Morat 7474* (NOU, P, PVNH). Without precise locality, 500 m, *Morat 7445* (MO, NOU, P, PVNH). — SANTO : Au-dessus d'Ipayato, sur le sentier de Pic Santo, *Bourdy 1104* (K, NOU, P, PVNH). Cumberland, crête entre rivière Piamegou et Piamaéto, 1000 m, *Cabalion 895* (NOU, PVNH). Mt. Tabwemasana, 1800 m, *Cabalion 2818* (NOU, P, PVNH); summit, 1879 m, *Gillison & Beveridge RSNH 3522* (K, MO, P, PVNH); 1600-1800 m, *MacKee 24168* (K, P); entre les deux sommets, 1800 m, *J. Raynal RSNH 16346* (A, K, NOU, PVNH); sommet, 1879 m, *Veillon 2466* (NOU, P); *Veillon RSNH 4559* (K, P, PVNH). — ERROMANGA : Pontutu, *Bourdy 200* (NOU, P, PVNH). Dillon's Bay, 300 m, *Cabalion 1057* (NOU, PVNH). Village de Pumpier, Potiraousak, 330 m, *Cabalion 1650* (NOU, P, PVNH). Potnarhvin, bord du chemin de Cook Bay, 120 m, *Cabalion 2188* (K, NOU, P, PVNH). Ipota, *Cabalion 2348* (PVNH). Tableland, 24 Jul 1896, *Morrison s.n.* (K); 16 Jul 1896, *Morrison s.n.* (K). — TANNA : Centre Brousse, *Morat 5890* (NOU, P); *5932* (NOU, P). — ANEITYUM : Entre Port Patrick et Ounwetch, *Bourdy 423* (PVNH). Crête descente sud du Mt. Ougapnaeruk, 500-600 m, *Cabalion 1991* (NOU, PVNH). Anelgaohat and vicinity, 100 m, *Chew RSNH 78* (K, NOU, P, PVNH). Anelgauhat Bay, 60 m, *Kajewski 749* (A, BISH, BRI, K, MEL, NY, P, US); up to 600 m, *977* (coll. J. P. WILSON) (A, BISH, BRI, K, NY, P, US). Without precise locality, 300 m, *Schmid 3747* (NOU).

Polyscias cissodendron is one of the most characteristic and widespread members of the genus in the southwest Pacific, extending from the Santa Cruz Islands in the southeastern Solomon Island through Vanuatu and New Caledonia to Lord Howe Island. LOWRY et al. (1986) summarized the synonymy presented above, and included *Montaguiea haplostemon*, originally described as a monotypic genus of *Anacardiaceae* based on a specimen from a staminate individual.

In Vanuatu this species occurs in rain forests and seconday forests, from near sea level to 1879 m at the summit of Mt. Tabwemasana on Santo. Fertile material has been collected during most months, but flowering and fruiting appear to peak between June and September. On New Caledonia *P. cissodendron* is restricted to non-ultrabasic soils, one of several features that distinguishes it from its closest apparent relative, *P. dioica* (Vieill.) Harms.

2. **Polyscias schmidii** Lowry, *sp. nov.* — Fig. 3.

Arbor, foliis compositis pennatis 80-90 cm longis; foliolis 23, ovatis, 7-11 × 3.5-6 cm, apice anguste acutis, integris, basi truncato-rotundata vel subcordata; rachide articulato; petiolo 17-20 cm longo et 4.5-6 mm in diam., basi a vagina alata nudata. Inflorescentia femina omnis dense puberula, axibus secundariis circa 15 in longitudinem ad 5-10 cm aequantibus, tertiariis illis 15-20 in quoque axe secundario, 4-8 mm longis, ab umbellula terminatis sed etiam a floribus 1-2 lateralibus bracteolarum in axilla mox caducearum quarum cicatrices semper conspicuae sunt. Ovarium, carpellis 2(-3), stylis libris ad basin propemodum. Fructus juvenalis lateraliter compressus, ample ellipticus vel orbicularis, 3.8-4.2 mm in altitudinem aequans.

Dioecious (?) trees. Leaves 80-90 cm long; leaflets 23, papyraceous, ovate, the lateral ones strongly oblique, nearly falciform, 7-11 × 3.5-6 cm, the apex narrowly acute, the margin entire and irregularly undulate, very slightly thickened, minutely revolute, especially in the lower half, the base truncate-rounded to subcordate, strongly oblique; petiolules 5-15 mm long; rachis articulated at petiolule bases; petiole 17-20 cm long, 4.5-6 mm in diam., without an alate leaf sheath at the base. Female inflorescence terminal, erect, compact, densely puberulent throughout, the bractlets linear-subulate, early caducous, the primary axis 10-15 cm long, the secondary axes ca. 15, scattered, 5-10 cm long, the tertiary axes (peduncles) ca. 15-20 per secondary axis, scattered, 4-8 mm long, and bearing a terminal umbellule of 9-12 flowers and 1-2 laterally disposed flowers, and subtended by a caducous bractlet leaving an evident scar, the pedicels 1.8-3 mm long, 0.4-0.6 mm in diam., stiff in fruit. Calyx shallowly cupuliform, 0.2-0.3 mm high, the rim undulate and irregularly 5-denticulate, not hyaline. Corolla and stamens unknown. Ovary 2(-3)-carpellate; styles 2(-3), free nearly to the base, erect to divergent just after anthesis, 0.8-1 mm long. Developing fruit laterally compressed (or triangular, with the faces somewhat concave, in 3-carpellate flowers), widely elliptic to orbicular, 3.8-4.2 mm high, the base rounded to very shallowly subcordate, the ribs weakly developed.

TYPE : *Schmid 3162 "A"*, Vanuatu, Erromanga, without precise locality, forêt à Kaoris, 200-300 m (holo-, P! (mounted on 2 sheets); iso-, K! (mounted on 2 sheets), MO!).

While the somewhat incomplete type specimen appears to represent the only available material of this poorly known plant, it is more than sufficient to permit the description of *P. schmidii* as a new species. Additional collections, especially of staminate material, would be very useful for expanding the description presented here.

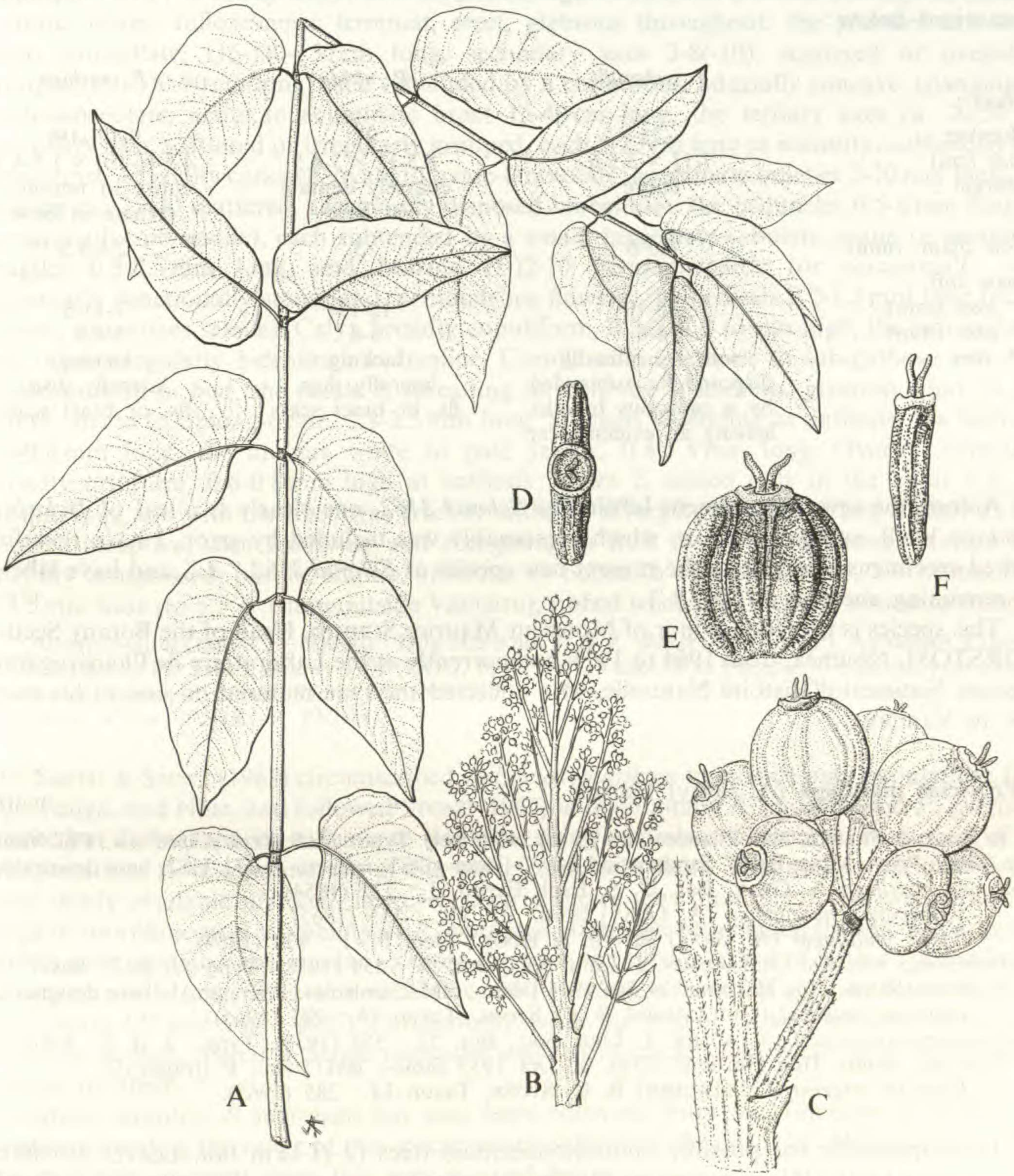

Fig. 3. — **Polyscias schmidii** : **A**, leaf × 0.3; **B**, infructescence × 0.3; **C**, umbellule in fruit × 3; **D-F**, fruit × 4.

Polyscias schmidii appears to form part of a group of closely related taxa that also includes two as yet undescribed species from New Caledonia (*P. nitida* Lowry, ined., and *P. nothisii* Lowry, ined.), from which it can be distinguished by a number of characters, including those summarized below :

	P. schmidii	*P. nitida*	*P. nothisii*
Leaflets :			
Number :	21	21	9-17(-19)
Size (cm) :	7-11 × 3.5-6	8.5-11 × 3-6.5	4.5-8(-10) × 1.5-4.3
Margin :	entire	coarsely dentate at base	entire to remotely crenate at base
Petiole diam. (mm) :	4.5-6	5	2.5-3.5
Female Infl. :			
2° axes (mm) :	5-10	12-13	7-11.5
3° axes (mm) :	4-8	6-8	3-4.5
3° axes :	with 1-2 laterally disposed fls. subtended by a caducous bractlet leaving an evident scar	lacking laterally disp. fls. or bract scars	lacking laterally disp. fls. or bract scars

Among the several specimens labeled as *Schmid 3162*, one clearly is a leaf of *Delarbrea paradoxa* Vieill. subsp. *paradoxa*, which presumably was included by error. I have therefore marked specimens referable to the present new species as *Schmid 3162 "A"*, and have labeled the remaining sheet as *3162 "B"*.

This species is named in honor of Monsieur Maurice SCHMID, Head of the Botany Section of ORSTOM, Nouméa, from 1964 to 1975, and currently at the Laboratoire de Phanérogamie, Muséum National d'Histoire Naturelle, who collected the type material on one of his many trips to Vanuatu.

3. **Polyscias multijuga** (A. Gray) Harms

In ENGL. & PRANTL, Nat. Pflanzenfam. III (8) : 45 (1894). Type : *U. S. Expl. Exped. s.n.*, Fiji, Vanua Levu, Mbua Prov., Mbua Bay ("Sandalwood Bay") (lecto-, US!; isolecto-, GH!, US!; here designated).
Paratropia multijuga A. GRAY, Bot. U. S. Expl. Exped. 1 : 722 (1854).
— *Nothopanax multijugum* (A. GRAY) SEEM., Fl. Vit. : 115 (1865).
— *Panax multijugus* (A. GRAY) BENTH. & HOOK., Gen. Pl. 1 : 938 (1867).
Tieghemopanax nusedhul GUILLAUMIN, J. Linn. Soc., Bot. 51 : 554 (1938). Type : *I. & Z. Baker 13a*, Vanuatu, Santo, Hog Harbour, 24 Jan 1934 (lecto-, BM!; isolecto-, P (fragm.)!; here designated).
— *Polyscias nusedhul* (GUILLAUMIN) B. C. STONE, Taxon 14 : 285 (1965).
Tieghemopanax excelsa GUILLAUMIN, J. Linn. Soc., Bot. 51 : 554 (1938). Type : *I. & Z. Baker 13*, Vanuatu, Santo, Hog Harbour, 25 m, 30 Oct 1933 (holo-, BM!; iso-, P (fragm.)!).
— *Polyscias excelsa* (GUILLAUMIN) B. C. STONE, Taxon 14 : 285 (1965).

Hermaphroditic (or possibly andromonoecious) trees (2-)3-15 m tall. Leaves 50-100 cm long; leaflets 13-21(-25), papyraceous to thinly coriaceous, narrowly oblong-ovate to elliptic-ovate (the lowermost 1-2 pairs often widely elliptic-ovate), the lateral ones often strongly oblique to nearly falciform, 11-25 × 3.5-10(-12) cm, the apex narrowly acute to acuminate or cuspidate, the margin entire and minutely revolute, the base rounded or truncate to shallowly

cordate and often strongly oblique; petiolules stout, 2-40(-50) cm long; rachis articulated at petiolule bases; petiole stout, 10-30(-35) cm long, enlarged and clasping at the usually lenticellate base, evidently alate for 5-14(-20) cm with coriaceous to membranous, occasionally revolute wings. Inflorescence terminal, erect, glabrous throughout, the primary axis stout, often lenticellate, (15-)40-150 cm long, secondary axes 3-8(-10), scattered or irregularly grouped, (10-)30-90 cm long, each subtended by a coriaceous, adaxially concave, triangular to ovate-lanceolate, acute to acuminate bract 15-40 cm long, the tertiary axes ca. 20-50 per secondary axis, scattered or irregularly grouped, each 5-23 cm long at maturity, subtended by a coriaceous, adaxially concave, ovate to ovate-lanceolate, acuminate bractlet 2-20 mm long, and bearing ca. 25-40 scattered, racemosely disposed umbellules, the peduncles 0.5-6 mm long (or occasionally sub-sessile), each subtended by a small, lanceolate-subulate, acute to acuminate bractlet 0.5-2.5 mm long, and bearing (1-)2-10 hermaphroditic (or occasionally some apparently functionally staminate), protandrous flowers, the pedicels 0.2-1.2 mm long (or the flowers sometimes sessile). Calyx broadly cupuliform, 0.2-0.4(-0.6) mm high, the rim undulate and often irregularly 5-denticulate, hyaline. Corolla oblong-elliptic to sub-globose and often tinged pinkish in bud, the petals 5, spreading to recurved at anthesis, greenish white to pale yellow, ovate to oblong-ovate, 1.8-2.5 mm long. Stamens ascending at anthesis, the filaments 0.5-0.8 mm long, the anthers white to pale yellow, 0.8-1.5 mm long. Ovary 2-carpellate, broadly urniform, 0.6-0.8 mm high at anthesis; styles 2, united only in the basal 1/3, 0.4-0.6 mm long and with the free arms erect at anthesis, diverging and expanding slightly as they become receptive, then recurving and elongating in fruit to 0.6-1.5 mm long. Mature fruit laterally compressed, purple, elliptic, orbicular or oblate to depressed ovate, 2.8-3.5 mm high, 3-3.5 mm wide (to 5.5 × 6 mm outside Vanuatu), ribbed when dry, the base obtuse to truncate.

ADDITIONAL MATERIAL. — SANTO : Hog Harbour, *I. & Z. Baker 71a* (BM, P). Au-dessus d'Ipayato sur le sentier de Pic Santo, *Bourdy 1101* (NOU, P, PVNH). Vallée de la Pialapa, rive droite, proximité du campement principal, 200 m, *Suprin 285* (NOU, P). — MALEKULA : S.W. Bay, Lemnapyang Peninsula, 200-300 m, *Chew 382* (K, P, PVNH).

SMITH & STONE (1968) circumscribed *Polyscias multijuga* to include only populations from Fiji, Tonga, and Niue, and followed STONE (1965) in maintaining *P. nusedhul* and *P. excelsa* as related but distinct species endemic to Vanuatu, citing a number of character in support of this interpretation. A re-examination of the older collections from Vanuatu, supplemented with some newly available material, however, clearly shows that these plants fall well within the limits of morphological variability of *P. multijuga*, and must be included therein. In particular, leaflets with cordate bases similar to those found in the type material of both *P. nusedhul* and *P. excelsa* can be seen on certain collections of *P. multijuga* from Fiji cited by SMITH & STONE (e.g., *Smith 122* and *Smith 4837*). Furthermore, while the type of *P. nusedhul* does indeed have subsessile flowers, SMITH & STONE indicated that this character also occurs in *P. multijuga*, as defined by them.

More recently, *P. multijuga* has also been collected from the Territory of Wallis and Futuna, extending the range of this species nearly 400 km to the north (cf. MORAT et al., 1985). The available material from this area is cited below :

WALLIS : environ du Lac Nanumaha, *Veillon 5161* (P). — FUTUNA : Fakaki, *Hoff 3996* (P). Alo, littoral, *MacKee 19874* (P). Leava, *Yen 452* (BISH, P). — ALOFI : Mua, *Hoff 4131* (P). Without precise locality, *Morat 7243* (P).

Collections from Vanuatu indicate that *Polyscias multijuga* occurs in primary and disturbed forest from near sea level to perhaps 300 m, although it would not be surprising if it extends to higher elevations and other vegetation types, since populations in Fiji, Tonga and Niue have been collected to 1100 m and from a wide range of primary forest types and second-growth habitats.

4. **Polyscias samoensis** (A. Gray) Harms

In Engl. & Prantl, Nat. Pflanzenfam. III (8) : 45 (1894). Type : *U. S. Expl. Exped. s.n.*, Samoa, "Savai'i and Tutuila" (holo-, US!, no. 47923; iso-, BM (fragm.)!, GH!).
Panax samoense A. Gray, Bot. U. S. Expl. Exped. 1 : 717 (1854).
— *Nothopanax samoense* (A. Gray) Seem., Fl. Vit. : 116 (1865).
Arthrophyllum kaltenbachii Riedl-Dorn & Riedl, Linzer Biol. Beitr. 18 : 374 (1986). Type : *J. McGillivray 51*, Vanuatu, Aneityum (holo-, W!; iso-, BM!).

Andromonoecious shrubs or small trees to 7 m tall. Leaves (25-)35-100 cm long; leaflets 11-17, papyraceous, elliptic-ovate to nearly oblong, the lateral ones often oblique, (6-)8-23 × (2.5-)3-11 cm, the apex acuminate (occasionally shortly so), the margin entire to irregularly undulate, slightly thickened and often minutely revolute, the base rounded or truncate to subcordate, often somewhat oblique; petiolules slender, 6-25(-30) mm long; rachis enlarged but not evidently articulated at petiolule bases; petiole slender, 8-20 cm long, clasping at the base and alate for 2.5-8 cm with narrow, membranous wings. Inflorescence terminal, erect, glabrous throughout, the primary axis short (perhaps to 20 cm long), the secondary axes several (3-7?), generally aggregated in loose whorls, 18-35 cm long, each subtended by an early caducous bract, the tertiary axes (peduncles) 18-25 per secondary axis, usually borne together in groups to form several pseudoverticils and a terminal umbel, each (15-)30-80 mm long, subtended by a linear-lanceolate, eventually caducous bractlet 5-10 mm long, and bearing a terminal umbellule of 5-11 hermaphroditic (or occasionally some functionally staminate), protandrous flowers and often 1-2(-4) laterally disposed flowers (or rarely the axis branched again to form 2-4 fourth-order umbellules), the pedicels very slender, filiform, 7-15 mm long at anthesis, expanding in fruit to 20(-25) mm long. Calyx very broadly cupuliform, shallow, 0.2-0.5 mm high, the rim undulate and irregularly 5-denticulate, hyaline. Corolla oblong-elliptic and dark purple in bud, the petals 5, ovate-lanceolate, 2.5-3.5 mm long (smaller in staminate flowers). Stamens ascending at anthesis, the filaments slender, less than 0.5 mm long, the anthers 1.3-1.7 mm long (smaller in staminate flowers). Ovary 2-carpellate (vestigial in staminate flowers), weakly oblate or orbicular to widely ovate, 1.5-2.5 mm high at anthesis; styles 2, free nearly to the base, erect and appressed at anthesis, diverging as they become receptive, then recurving strongly and expanding in fruit to 1.5 mm long. Mature fruit laterally compressed, oblate to orbicular or ovate-orbicular, 6-7 mm high, 6-7.5 mm wide, the conspicuous nerves often tinged reddish to purple, the base rounded to subcordate.

Additional material. — Pentecost : Bunlap, *Barrau NH 52* (P). — Nguna : Sommet du volcan, 590 m, *Cabalion 917* (NOU). — Efate : Toukoutouk, 200 m, *Schmid 5076* (NOU, P). — Erromanga : Potnarhvin, côté N du village, 5 m, *Sam 226* (NOU, P, PVNH). — Aneityum : Coast to Saddle Mt., *L. E. Cheesman A. 106* (BM, P).

Polyscias samoensis is very distinctive and can easily be separated from other members of the genus in the Pacific region by its long, slender pedicels and conspicuously nerved, 2-carpellate fruits. It was previously though to be endemic to several islands in Samoa, although SMITH & STONE (1968) mentioned a fragmentary specimen at the British Museum collected on Aneityum in 1859 (i.e., the isotype of *Arthrophyllum kaltenbachii*), which they considered suggestive of *P. samoensis*. Additional material now confirms without any doubt that *P. samoensis* occurs on at least five island in Vanuatu, which raises the interesting question of why it is apparently absent from both Fiji and the Territory of Wallis and Futuna, with a resulting disjunction of over 2000 km.

The type specimen of *Arthrophyllum kaltenbachii*, recently described by RIEDL-DORN & RIEDL (1986), is clearly referable to *Polyscias samoensis*, and this new name must therefore be treated as a synonym. In any case, the specimen in question could not represent a species of *Arthrophyllum*, even though its presence in Vanuatu would have been logical on phytogeographic grounds (*Arthrophyllum* is currently known from New Caledonia, New Guinea, and extending from the Philippines and Indo-China to Nicobar Island), since it lacks the characteristic one-celled ovary that so clearly defines the genus.

Available label data on specimens of *Polyscias samoensis* from Vanuatu indicate that this species occurs from near sea level to about 600 m elevation. Flowering material has been collected in March and November, while specimens with fruit have been gathered in July and November.

5. **Polyscias scutellaria** (N. L. Burm.) Fosberg

Univ. Hawaii Occ. Papers 46 : 9 (1948). Type : Based on the Rumphian plate *31* (cf. MERRILL, 1917), which was incorrectly cited as plate *30* by BURMAN (1768) and FOSBERG (1948).

Crassula scutellaria N. L. BURM., Fl. Ind. : 78 (1768).

— *Nothopanax scutellarium* (N. L. BURM.) MERR., Interpret. Rumph. Herb. Amb. : 409 (1917).

Polyscias pinnata J. R. & G. FORST., Char. Gen. Pl. : 64, *tab. 32* (1776). Type : *W. Anderson s.n.*, Vanuatu, Tanna (lecto-, BM!; designated by STONE, Taxon 14 : 285, 1965).

— *Panax pinnatum* (J. R. & G. FORST.) BAILLON, Hist. Pl. 7 : 197 (1879); *non* A. RICH., Tent. Fl. Abyss. 1 : 335 (1847); *nec* LAM., Encycl. 2 : 715 (1788).

Aralia cochleata LAM., Encycl. 1 : 224 (1783). Type : Based on the Rumphian plate *31* (cf. SMITH & STONE, 1968 : 453).

— *Panax cochleatum* (LAM.) DC., Prodr. 4 : 253 (1830).

— *Nothopanax cochleatum* (LAM.) MIQ., Pl. Jungh. 3 : 425 (1855).

Polyscias umbellata SPRENGEL, *in* BIEHLER, Pl. Nov. Herb. Spreng. : 18, no. 136 (1807). Type : *Forster s.n.*, Vanuatu, Tanna (holo-, probably B (presumably destroyed); iso-, K!, UPS; cf. GARNOCK-JONES, Taxon 35 : 126, 1986).

Panax scutellarioides REINW. ex BLUME, Bijdr. : 880 (1826). Type : No type was cited and no authentic material has been located.

Panax conchifolium ROXB., Fl. Ind., ed. 2, 2 : 77 (1832). Type : Based on the Rumphian plate *31*.

Panax heyneanum G. DON, Gen. Syst. 3 : 385 (1835). Type : No type was cited and no authentic material has been located.

Panax forsteri DECNE. & PLANCH., Rev. Hort., Sér. 4, 3 : 105 (1854). Type : Based on *Polyscias pinnata* J. R. & G. Forst.

Nothopanax tricochleatum MIQ., Fl. Ind. Bat., Suppl. 1 : 340 (1860); MERRILL, Interpret. Rumph. Herb. Amb. : 409 (1917). Type : No type was cited and no authentic material has been located.

— *Polyscias tricochleata* (MIQ.) FOSBERG, Phytologia 5 : 290 (1955).

— *Polyscias scutellaria* (N. L. BURM.) FOSBERG cv. *Tricochleata* (MIQ.) SMITH & STONE, J. Arnold Arbor. 49 : 455 (1968).

Panax manguette VIEILL., Ann. Sci. Nat. Bot., Sér. 4, 16 : 66 (1862). Type : No type was cited and no authentic material has been located.

Panax rumphii HASSK., Abh. Naturf. Gesellsch. Halle 9 : 220 (1866). Type : Based on the description of *Scutellaria secunda latifolia* Rumph. (Herb. Amb. 4 : 76, 1743) according to MERRILL (1917); no type material appears to have been preserved.

Aralia polyscias SPRENG. ex SEEM., J. Bot. 6 : 138 (1868). Type : Based on *Polyscias umbellata* Spreng. (cited as *P. umbellata* Forst.).

Aralia rotundifolia hort. ex TRUFFAUT, Rev. Hort. 63 : 224 (1891). Type : No type was cited and no authentic material has been located.

Aralia balfouriana hort. ex ANDRÉ, Rev. Hort. 70 : 229 (1898). Type : No type was cited and no authentic material has been located.

— *Panax balfourii* (hort. ex ANDRÉ) SANDER, Cat. 1899 : 24 (1899).

— *Polyscias balfouriana* (hort. ex ANDRÉ) L. H. BAILEY, Rhodora 18 : 153 (1916).

Andromonoecious treelets or small trees 2-6(-7) m tall. Leaves (8-)13-40(-50) cm long; leaflets 1 (the leaves thus unifoliolate), 3 or 5 (rarely 2 or 4), dark green or yellow green above, paler beneath, papyraceous to subcoriacecous, widely elliptic to oblate or reniform, occasionally somewhat ovate or obovate, flat or sometimes adaxially concave and shallowly scutellate, (5-)6-20(-24) × (5-)6-20(-26) cm, the apex rounded (rarely slightly emarginate), the margin subentire to coarsely crenulate or shallowly serrate (occasionally to subpalmately lobed), slightly thickened and often minutely revolute, the teeth 1-2 cm distant in larger leaflets and sometimes conspicuously spinulose, the base shallowly cordate or convex (rarely rounded-truncate); petiolules (0.5-)1.5-5 cm long; rachis articulated at petiolule bases (including in unifoliolate leaves); petiole (3-)5-20(-30) cm long, enlarged and clasping at the base, evidently alate for 1-5(-6) cm with membranous wings. Inflorescence terminal, erect, glabrous throughout, the scarious bractlets early caducous, the primary axis stout, often lenticellate, 30-80 (-100) cm long, the secondary axes ca. 15-30, grouped in 2-4 verticils (occasionally opposite or irregularly scattered below), 15-50 cm long, tertiary axes (peduncles) ca. 7-30 per secondary axis, grouped in 4-6 often somewhat irregular verticils, each 2-18 mm long at maturity, with a terminal umbellule of (5-)8-25 hermaphroditic, protandrous flowers and functionally staminate flowers, and bearing 2-6 paired (or occasionally scattered to irregularly grouped), scarious, adaxially concave, deltate-triangular bractlets, each 0.5-1 mm long, the pedicels slender, 1.5-7 mm long. Calyx broadly cupuliform, 0.4-1.2 mm high, the rim undulate and irregularly 5-8-denticulate, hyaline. Corolla elliptic to subglobose in bud, the petals (4-)5-7(-9), spreading to recurved at anthesis, ovate-lanceolate, 1.6-2.5 mm long (somewhat smaller in staminate flowers). Stamens as many as petals, the filaments 0.5-1 mm long, the anthers cream white, 1.2-1.8 mm long. Ovary (2-)3-5-carpellate, obtriangular to broadly urniform, 0.5-1 mm high at anthesis; styles as many as carpels, free nearly to the base, 0.4-0.6 mm long and erect at anthesis, spreading and expanding slightly in fruit to 0.8 mm long. Mature fruit infrequently seen, subglobose to depressed-globose (somewhat triangular to quadrangular when 3- or 4-carpellate), 4-6 mm high, ribbed when dry.

ADDITIONAL MATERIAL. — BANKS ISLANDS : Without locality, *Vienne s.n.* (NOU). — SANTO : Hog Harbour, *I. & Z. Baker 64* (BM); *I. Baker 261* (BM). Pialulup, *Bourdy 263* (K, NOU, P, PVNH). Cumberland, rivière Pialoraï, 10 m, *Cabalion 711* (NOU, P); *872* (PVNH). Vallée de la Pialoraï, *Morat 6418* (MO, NOU, P). Luganville, chez M. Goron, bord E de la rivière Sarakata, près du pont, *Suprin* 371 (NOU, P). — PENTECOST : Without precise locality, *Barrau s.n.* (P). Melsisi, 300 m, *Cabalion 779* (NOU). Loltong, plateau, 150 m au-dessus du village, *Cabalion 796* (NOU). Piste de Baie Barrier à Wali, *Morat*

5480 (NOU, P); *5481* (NOU). — MALEKULA : Lamap, 30 m, *Aubert de la Rüe s.n.* (P). Big Namba Country, 300 m, *T. F. Cheesman* (cited as *L. E. Cheesman* on the label, likely prepared later and in error) *27* (K). Without precise locality, *Herre 55* (F, NY), *69b* (F, NY). — EFATE : Without precise locality, *Barrau s.n.* (P); *Creston 115* (P). Port-Vila, *Levat s.n.* (P). Onesua, NE coast, 100 m, *Stone 2251* (BISH). — ERROMANGA : Happyland, *Bourdy 150* (PVNH). Ipota, 30 m, *Bourdy 245* (P, PVNH); terrain d'aviation, *Cabalion 2032* (PVNH). — ANEITYUM : Ithuma, *Morrison s.n.* (K).

The circumscription and taxonomic history of *Polyscias scutellaria* are complex, in large part because of the species' long history of cultivation, both by native peoples throughout the South Pacific and adjacent Malesia, and later as an ornamental plant in Europe, which has resulted in many forms with distinctive foliar characters that have often been described as separate taxa.

STONE (1965*a*), who discussed the typification of *Polyscias*, argued that *P. pinnata* J. R. & G. Forst. (which corresponds to the "type species" since its lectotype serves as the type specimen for the genus) could be maintained as distinct from *P. scutellaria* on the basis of a number of foliar and floral characters. This same conclusion was again upheld (STONE, 1965*b*) in a review of Micronesian *Polyscias*. After examining additional material, however, SMITH & STONE (1968) concluded that no morphological discontinuities could be discerned that would permit retaining *P. pinnata* as a distinct taxon, and consequently they placed it in synonymy under *P. scutellaria*, whose epithet has priority. This interpretation is completely consistent with observations made both as part of the present study and for a revision of *Araliaceae* for the Flore de la Nouvelle-Calédonie et Dépendances, and is therefore followed here.

PHILIPSON (1979) also accepted the name *Polyscias scutellaria* for Indo-Malayan material that would fall within the concept adopted here, although he argued (p. 77) that the name *P. pinnata* J. R. & G. Forst. should be restricted to "Polynesian" plants (and presumably also Melanesian populations, which would include the type) that he felt were specifically distinct. Several facts suggest, however, that this interpretation resulted primarily from a confusion between *P. pinnata* J. R. & G. Forst. and its later homonym *P. pinnata* Lam. First of all, PHILIPSON (p. 75-76) states that he adheres "to the view which unites all forms having orbicular, usually bowl-shaped leaves under the concept of *P. scutellaria*", an interpretation that would require the inclusion of *P. pinnata* J. R. & G. Forst., whose type specimen clearly meets this criterion. Secondly, in his discussion under *P. scutellaria*, PHILIPSON (p. 75) states that STONE (1965*b*) "advanced evidence for uniting... trifoliolate plants with *P. pinnata* (= *P. cumingiana*)..." STONE, however, was referring to *P. pinnata* J. R. & G. Forst., while PHILIPSON includes only *P. pinnata* Lam. in his synonymy under *P. cumingiana*, restricting the former name to "Polynesian" plants considered to represent a distinct species, as mentioned above.

The native range of *Polyscias scutellaria* is not clear, although SMITH & STONE (1968) suggest that it may be indigenous to Vanuatu and the Solomon Islands, pointing out that the species occurs there in forests from near sea level to about 300 m. Certainly in other areas this species is almost always encountered near human habitations, most often in the form of cultivated hedges that are trimmed more-or-less regularly, which results in infrequent flowering.

6. **Polyscias cumingiana** (K. Presl) Fern.-Vill.

Nov. App. : 102 (1880). Types : *Cuming 1553*, Philippines, Mindoro, Manila (holo-, PR; iso-, P (2 sheets)!).

Paratropia cumingiana K. Presl, Epimel. Bot. : 250 (1851).

— *Nothopanax cumingii* (K. Presl) Seem., Fl. Vit. : 114 (1865).

— *Panax cumingiana* (K. Presl) Rolfe, J. Linn. Soc., Bot. 21 : 310 (1884).

— *Panax cumingii* (K. Presl) Harms, *in* Engl. & Prantl, Nat. Pflanzenfam. III (8) : 45 (1894).

— *Anomopanax cumingianus* (K. Presl) Merr., Philip. J. Sci. 17 : 300 (1920).

Aralia filicifolia C. Moore ex E. Fourn., Ill. Hort. 23 : 72, *pl. 240* (1876). Type : No specimen appears to have been preserved; the plate must therefore serve as the type.

— *Polyscias filicifolia* (C. Moore ex E. Fourn.) L. H. Bailey, Rhodora 18 : 153 (1916).

Panax pinnatum Lam., Encycl. 2 : 715 (1877), *non* A. Rich. (1847). Type : Based on the Rumphian plate *32*.

— *Nothopanax pinnatum* (Lam.) Miq., Bonplandia 4 : 139 (1856).

— *Arthrophyllum pinnatum* (Lam.) Clarke, Fl. British India 2 : 734 (1879), *pro basionym*.

Panax secundum Schult., Syst. Veg. 6 : 215 (1820). Type : Based on the Rumphian plate *32*, and accompanied with a reference to *Panax pinnatum* Lam.

Aralia naumannii El. Marchal, *in* Engl., Bot. Jahrb. Syst. 7 : 469 (1886). Type : *Naumann s.n.*, Papua New Guinea, New Britain, Blanche-Bay, in silvis ad vulcanum Kambui (holo-, B, presumably destroyed).

Panax crispatum hort. ex Bull, Cat. : 9 (1888). Type : No type was cited and no authentic material has been located.

— *Nothopanax crispatum* (hort. ex Bull) Merr., Philip. J. Sci., Bot. 7 : 241 (1912).

Panax ornatum hort. ex Bull, Cat. : 9 (1888). Type : No type was cited and no authentic material has been located.

— *Nothopanax ornatum* (hort. ex Bull) Merr., Philip. J. Sci., Bot. 7 : 241 (1912).

Panax rumphiana Harms, *in* Engl. & Prantl, Nat. Pflanzenfam. III (8) : 45 (1894). Type : Proposed as a substitute for *Panax pinnatum* Lam., and based on the Rumphian plate *32*.

Polyscias sorongensis Gibbs, Arfak : 216 (1916). Type : *Gibbs 6287*, Indonesia, Irian Jaya, Sorong Island (lecto-, K!; isolecto-, BM!; here designated).

Andromonoecious shrubs or treelets 1.5-4 m tall. Leaves (25-)40-75(-90) cm long; leaflets 9-15, dark green above, paler beneath, or often variegated yellow, especially when exposed to much sunlight, papyraceous, elliptic to lanceolate or ovate, often narrowly so, (9-)12-30(-34) × (2-)3-10 cm (somewhat smaller in juvenile foliage), the apex acuminate or acute to obtuse, often minutely mucronate, the margin entire to coarsely crenate, often with minute, widely spaced teeth rarely exceeding 1(-1.5) mm long (to deeply pinnatifid in juvenile foliage), minutely revolute, the base obtuse to attenuate (occasionally truncate), often slightly oblique; petiolules 0.5-2.5(-3) cm long; rachis articulated at petiolule bases; petiole (8-)10-20 cm long, slightly enlarged and clasping at the sparsely lenticellate base, evidently alate for (3-)3.5-4.5 cm with membranous wings. Inflorescence terminal, pendent, glabrous throughout, the primary axis ca. 15-30 cm long, the secondary axes 5-7, usually in verticils, (22-)30-80(-140) cm long, tertiary axes ca. (10-)15-25 per secondary axis, mostly grouped in 2-4(-5) verticils, each (4-)6-14 cm long at maturity, subtended by a subcoriaceous, adaxially concave, lanceolate-subulate, acuminate bractlet 3-6 mm long, and bearing either a terminal umbellule of protandrous, hermaphroditic flowers and 2-4(-6) paired lateral umbellules of staminate flowers, or further divided into ca. 10-15 fourth-order axes each bearing a terminal umbellule of hermaphroditic or staminate flowers and 2-4 paired lateral, staminate umbellules (these often apparently abortive), the staminate umbellules each subtented by a small, subulate bractlet ca. 1-2 mm

long, the peduncles 0.5-2.5 cm long, each bearing ca. 10-25 flowers per umbellule (occasionally fewer in staminate umbellules), the pedicels 4-8 mm long (shorter in staminate flowers). Calyx broadly cupuliform, 0.4-0.6 mm high, the rim undulate and (4-)5(-6)-toothed, hyaline. Corolla oblong-elliptic to obovoid in bud, greenish or occasionally tinged brownish or purple, the petals (4-)5(-6), spreading to recurved at anthesis, ovate-lanceolate, 2.5-3.5 mm long (somewhat smaller in staminate flowers). Stamens as many as petals, the filaments 1-1.4 mm long, the anthers cream white, 1-1.6 mm long. Ovary (2-)3-5-carpellate, urniform or obtriangular to subinfundibuliform, 0.8-1.4 mm high at anthesis; styles as many as carpels, free nearly to the base, 1-1.4 mm long at anthesis, diverging as they become receptive and expanding slightly in fruit to 1.7 mm long. Mature fruit subglobose to widely ovoid, 3-4 (-5) mm high, ribbed when dry, the base often shallowly cordate.

ADDITIONAL MATERIAL. — SANTO : Big Bay (Malao), cultures et jachères près du village, 5 m, *MacKee RSNH 24268* (K, NOU, P, PVNH). — PENTECOST : Loltong, planté dans le village de Tabualasi, 100-150 m, *Cabalion 814* (NOU). Vallée au Sud de Melsisi, *Cabalion 1159* (NOU). Levetlis, 10 m, *Cabalion 2671* (K, NOU, P, PVNH). — EFATE : Port-Vila, Ecole d'Agriculture, *Cabalion 3130* (P, PVNH); in a garden, *Green RSNH 1120* (K, P, PVNH); cultivé, *MacKee RSNH 24057* (NOU, P, PVNH); *MacKee RSNH 24058* (NOU, P, PVNH). — ERROMANGA : Entre Ipota et Cook Bay, *Cabalion 2269* (NOU, PVNH).

Polyscias cumingiana is treated here largely in accordance with the rather broad interpretation set out by PHILIPSON (1979), and followed by SMITH (1985) and LOWRY et al. (1989). Although the various forms treated here can reasonably be considered as representing a monophyletic group, they are by no means morphologically uniform, and the entire assemblage could well benefit from a more detailed study.

Aralia filicifolia was described on the basis of cultivated material representing a juvenile form with narrow, entire to pinnately dissected leaflets, and has been placed in synonymy under *Polyscias cumingiana* by several recent authors, including those mentioned above. This is supported by the fact that FOURNIER's plate, which serves as the type of *A. filicifolia*, is nearly identical to juvenile stages collected from a number of populations of cultivated *P. cumingiana* in New Caledonia (*Lowry 3313, 3908*; *MacKee 5276, 13991, 14670, 29695, 29696, 40319, 40320*).

Polyscias cumingiana appears to be widely cultivated through out Malesia and the Southwest Pacific. According to PHILIPSON (1979) this species also forms part of the indigenous vegetation in at least much of Malesia, where it occurs in rain forest and secondary vegetation from low elevations occasionally to 1700 m. The true native range of *P. cumingiana* is, however, unknown. In Vanuatu *P. cumingiana* occurs only at low elevation, from sea level to about 150 m, and always as a cultivated plant in and around towns and villages.

7. **Polyscias guilfoylei** (Bull) L. H. Bailey

Rhodora 18 : 153 (1912). Type : Unknown, but indicated by BULL as " South Sea Islands ". According to SMITH & STONE (1968 : 457), the type material was possibly received from W. R. GUILFOYLE, who visited Samoa, Tonga, Fiji, Vanuatu and New Caledonia on H. M. S. *Challenger* in 1868 (cf. GUILFOYLE, J. Bot. 7 : 117-136, 1869). GUILFOYLE (1869) mentioned that cultivated plants of " *Aralia* " were observed in Samoa (p. 119) and Vanuatu (as New Hebrides, p. 133). No type material appears to have been preserved.

Aralia guilfoylei BULL, Cat. (1873); COGN. & MARCHÉ, Pl. Ornam. 2 : *pl. 58* (1874).
— *Nothopanax guilfoylei* (BULL) MERR., Philip. J. Sci., Bot. 7 : 242 (1912).

Panax laciniata WILLIAMS ex hort., Gard. Chron. II, 5 : 735 (1876). Type : No type was cited and no authentic material has been located. SMITH & STONE (1968 : 457) indicate that the original material brought into cultivation may have come from the Pacific area together with that of *P. guilfoylei.*
— *Polyscias guilfoylei* (BULL) L. H. BAILEY var. *laciniata* (WILLIAMS ex hort.) L. H. BAILEY, Rhodora 18 : 153 (1916).

Panax dumosus BULL ex hort., Gard. Chron. II, 19 : 404 (1883). Type : No type was cited and no authentic material has been located.

Panax victoriae BULL ex hort., Gard. Chron. II, 19 : 404, *fig. 60* (1883); RODIGAS, Ill. Hort. 31 : 75, *pl. 521* (1884). Type : No specimen appears to have been preserved; the plate published in Gardener's Chronicle must therefore serve as the type.
— *Nothopanax fruticosum* (L.) MIQ. var. *victoriae* (BULL ex hort.) MERR., Fl. Manila : 358 (1912).
— *Polyscias guilfoylei* (BULL) L. H. BAILEY var. *victoriae* (BULL ex hort.) L. H. BAILEY, Rhodora 18 : 153 (1916).

Aralia monstrosa hort. ex TRUFFAUT, Rev. Hort. 63, *fig. 54* : 224 (1891). Type : Although TRUFFAUT indicates that this plant was available as early as 1880, no earlier publication has as yet been found, and no type material was cited; his figure must therefore serve as the type.
— *Polyscias guilfoylei* (BULL) L. H. BAILEY var. *monstrosa* (hort. ex TRUFFAUT) L. H. BAILEY, Rhodora 18 : 153 (1916).

Andromonoecious shrubs or treelets to 5 m tall. Leaves once-pinnate (to irregularly decompound or 2-3-pinnate in some forms), (25-)35-55 cm long; leaflets (5-)7-9, medium to dark green above, paler beneath, often variegated pale yellow or whitish, especially along the margin, papyraceous, elliptic, ovate or obovate, often broadly so, 5-15 (-20) × 2.5-12 cm, the apex obtuse to broadly acute or acuminate, the margin spinulose-serrate, slightly thickened and minutely revolute, with teeth (1-)1.5-5 mm long, the base broadly cuneate to attenuate, often somewhat oblique (or when leaves more than once-compound, the ultimate divisions and apex usually narrower, and the margin irregularly incised or laciniate as well as spinulose-serrate); petiolules 1-3.5 cm long; rachis articulated at petiolule bases; petiole 7-18 cm long, clasping at the base, evidently alate for 1.5-3 cm with membranous wings. Inflorescence terminal, pendent, glabrous throughout, the bractlets usually caducous, the primary axis short, 3-6 cm long, the secondary axes 5-10, the lower 1-4 irregularly scattered and the upper ones forming a terminal umbel, each axis ca. 20-40(-60) cm long, tertiary axes 8-12 per secondary axis, grouped in 1-3 verticils (or occasionally solitary or subopposite), each (1.5-)3-12 cm long, fourth-order axes (peduncles) 1-4 per tertiary axis, each ca. 1-2 cm long, bearing a terminal umbellule of 8-20(-25) hermaphroditic, protandrous flowers and often 1(-2) lateral umbellules of ca. 5-15 functionally staminate flowers on a reduced peduncle, the pedicels 4-10 mm long (often shorter in staminate flowers). Calyx cupuliform, 0.3-0.5 mm high, the rim undulate and inconspicuously 5(-6)-toothed, hyaline. Corolla oblong-elliptic in bud, the petals 5(-6), deltoid-oblong, 2-2.5 mm long (smaller in staminate flowers). Stamens as many as petals, the filaments slender, 0.5-1.5 mm long, the anthers 1-1.5 mm long (somewhat smaller in staminate flowers). Ovary 3-4(-5)-carpellate, urniform to turbinate, ca. 1.5 mm high at anthesis; styles as many as carpels (vestigial in staminate flowers), nearly free to the base, erect at anthesis, diverging as they become receptive, recurving in fruit. Mature fruit rarely seen, subglobose, 4-5 mm high, ribbed when dry.

ADDITIONAL MATERIAL. — PENTECOST : Melsisi, *Barrau NH24* (P). Loltong, hameau Tabualasi, 100-150 m, *Cabalion 813* (NOU). Eukul, 500 m, *Cabalion 2513* (K, NOU, P, PVNH). Levetlis, 0-10 m, *Cabalion 2648* (NOU, PVNH). — ERROMANGA : Cooks Bay, *Morrison s.n.* (K).

Polyscias guilfoylei is very widely cultivated throughout much of the tropics and subtropics, either as trimmed hedges or small trees that are allowed to grow freely. Although the inflorescence structure of *P. guilfoylei* closely resembles that of *P. scutellaria* (and to a lesser degree *P. fruticosa*), the former is easily distinguished on the basis of a number of foliage characters, and especially the usually yellow or whitish variegations of the leaf margins. Nevertheless, the evolutionary relationships between *P. guilfoylei* and *P. scutellaria*, and perhaps also *P. fruticosa*, are very complex and clearly in need of additional study.

Although a number of varieties of *Polyscias guilfoylei* have been described, they all appear to have been based on cultivated forms whose distinctive features are likely the result of artificial selection, either by the horticultural trade or native peoples of the Southwest Pacific and Malesia. None of these forms is recognized in the present treatment.

Specimens with decompound leaves that are otherwise clearly referable to *Polyscias guilfoylei* on the basis of their inflorescence, flowers, fruits and overall foliar characters, are keyed with *P. fruticosa* merely for a matter of convenience.

8. **Polyscias fruticosa** (L.) Harms

In ENGL. & PRANTL, Nat. Pflanzenfam. III (8) : 45 (1894). Type : Based on the Rumphian plate *33*, doubtless drawn from a cultivated plant (cf. MERRILL, 1917; SMITH & STONE, 1968 : 459).

Panax fruticosa L., Sp. Pl., ed. 2 : 1513 (1763).
— *Nothopanax fruticosa* (L.). MIQ., Pl. Jungh. 3 : 425 (1855).
— *Tieghemopanax fruticosus* (L.). VIGUIER, Ann. Sci. Nat. Bot., Sér. 9, 4 : 61 (1906).

Panax obtusum BLUME, Bijdr. : 880 (1826). Type : No type was cited and no authentic material has been located.
— *Nothopanax obtusum* (BLUME) MIQ., Fl. Ind. Bat. I, 1 : 766 (1856).
— *Polyscias obtusa* (BLUME) HARMS, *in* ENGL. & PRANTL, Nat. Pflanzenfam. III (8) : 45 (1894), *nomen illeg., non* BLANCO (1837).

Aralia tripinnata BLANCO, Fl. Filip. : 223 (1837). Type : No type was cited, although the species is indicated to occur in Talalog, Pampargo, Papua, Bisaya, and Macan; no authentic material has been located.

Panax fruticosa L. var. *crispum* hort. BULL ex RAFARIN, Rev. Hort. 48 : 216 (1876). Type : No type was cited and no authentic material has been located.

Panax plumatum BULL ex hort., Gard. Chron. II, 9 : 439 (1878). Type : Although the species is indicated to originate from the Solomon Islands, no type was cited and no authentic material has been located.
— *Nothopanax fruticosa* (L.) MIQ. var. *plumatum* (BULL ex hort.) MERR., Fl. Manila : 358 (1912).
— *Polyscias fruticosa* (L.) HARMS var. *plumata* (BULL ex hort.) L. H. BAILEY, Rhodora 18 : 153 (1916).

Panax fruticosa L. var. *deleauana* hort. ex N. E. BROWN, Ill. Hort. 30 : 109, *pl. 492* (1883). Type : No specimen appears to have been preserved; the plate must therefore serve as the type.

Andromonoecious shrubs or treelets to 3(-5) m tall. Leaves 2-3-imparipinnate, (5-)10-50 (-70) cm long; primary leaf divisions (7-)11-15, each further divided once or twice (rarely only pinnatifid or deeply lacerate to serrate), the ultimate divisions light to yellowish green above and beneath, papyraceous, usually lanceolate, 3-6 times as long as broad, (1-)2-10(-18) × (0.2-) 0.3-2(-5) cm (rarely ovate-lanceolate and somewhat wider), the apex long-acuminate, the

margin laciniate to spinulose-serrate, usually irregularly so, slightly thickened and minutely revolute, with at least some teeth 5-10 mm long, the base narrowly cuneate to attenuate, often oblique; petiolules of the primary divisions ca. 1-3(-5) cm long; rachis articulated at petiolule bases; petiole (2-)5-15 cm long, clasping at the base, inconspicuously alate for 0.8-2.5 cm with narrow, membranous wings. Inflorescence terminal, erect, glabrous throughout, the bractlets early caducous, the primary axis 8-30(-60) cm long, the secondary axes 5-15, scattered or more often subverticillate, 7-25(-30) cm long, tertiary axes 5-15 per secondary axis, mostly grouped in 2-4 verticils, each 1-6 cm long at maturity, bearing a terminal umbellule of hermaphroditic, protandrous flowers and 2-6 paired, lateral umbellules of functionally staminate flowers borne on short peduncles and subtended by a small, subulate, irregularly persistent bractlet 0.5-1.5 mm long, the peduncles of the hermaphroditic umbellules each bearing ca. 5-30(-40) flowers (often fewer in staminate umbellules), the pedicels 1.5-4(-5) mm long (shorter in staminate flowers). Calyx cupuliform, 0.3-0.5 mm high, the rim undulate and 5-toothed, hyaline. Corolla oblong-elliptic in bud, greenish or white, the petals 5, spreading and soon falling at anthesis, obovate-oblong, (1.5-)2-3 mm long (smaller in staminate flowers). Stamens 5, the filaments slender, 1-1.2 mm long, the anthers cream white, 1.5-2 mm long. Ovary 2-3 (rarely 4)-carpellate, urniform, 1-1.5 mm high at anthesis; styles as many as carpels, free nearly to the base, 0.8-1.2 mm long and erect at anthesis, spreading as they become divergent, then recurving and expanding in fruit to 1.5 mm long. Mature fruit laterally compressed or trigonous (rarely quadrangular), orbicular to ovate-orbicular, 4-5 mm high, 4.5-6 mm wide, the base rounded (sometimes shallowly subcordate).

ADDITIONAL MATERIAL. — BANKS ISLANDS : GAUA : Namasari, *Bourdy 1000* (PVNH). Without precise locality, *Vienne s.n.* (NOU). — PENTECOST : Tungwi (= Tongwé), garden, *I. Baker 156* (BM). Loltong, plateau 150 m au-dessus du village, *Cabalion 798* (NOU, P). — EFATE : Port-Vila, *Cabalion 3131* (P); *Levat s.n.* (P). — ERROMANGA : Potiraousak, *Cabalion 1670* (PVNH). Ipota, près aéroport, 5 m, *Cabalion 2033* (NOU, P, PVNH). — TANNA : Lenakel, 150 m, *Kajewski 63* (A, K, NY, P). — ANEITYUM : Anelgauhat Bay, 150 m, *Kajewski 931* (A, BISH, K, NY, P, US).

Polyscias fruticosa is widely cultivated as an ornamental shrub or hedge plant. As with the preceding two species, its true native range is unknown, although SMITH & STONE (1968) point out that label data on one collection of *P. fruticosa* from Vanuatu (*Kajewski 931*) indicate that the material came from a rain forest tree 8 m tall, which might either represent its occurrence as part of the indigenous vegetation or, perhaps more likely, a naturalization.

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INDEX TO NAMES

The names of **new taxa** are in **bold characters**; *synonyms* are in *italics*.